

CLASSIFICATION OF EAST AFRICAN CROPS

SECOND EDITION

JOHN O. KOKWARO



University of Nairobi Press

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Classification of East African Crops

Second Edition

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Second Edition

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University of Nairobi



University of Nairobi Press

First Edition Published 1979 by
Kenya Literature Bureau, Nairobi – Kenya

Second Edition Published 2013 by
University of Nairobi Press, University of Nairobi
P.O. Box 30197, Nairobi – 00100, Kenya
Tel: +254-20-2314316, +254-726-610570

E-mail: nup@uonbi.ac.ke <http://www.uonbi.ac.ke/press>

The University of Nairobi Press supports and promotes University of Nairobi's objectives of discovery, dissemination and preservation of knowledge, and stimulation of intellectual and cultural life by publishing works of highest quality in association with partners in different parts of the world. In doing so, it adheres to the University's tradition of excellence, innovation, and scholarship.

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University of Nairobi Library CIP Data

SB87 Classification of East African Crops/John O. Kokwaro. – 2nd
.E2K6 ed. - Nairobi: University of Nairobi Press, 2013.
2013 205 pp. : ill.
1. Plants, Cultivated – Africa, East 2. Botany – Africa, East –
Classification I. Title

ISBN 10 – 9966792244 • ISBN 13 – 9789966792242

Printed by: Kul Graphics, P.O. Box 18095-00500, Nairobi, Kenya.

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PREFACE

This book endeavours to make the readers understand and recognise the crops and other useful plants grown in East Africa. It also aims at simplifying communication with regard to economic plant names. We may claim to know all the food plants that we need, but fail to recognise the lawn grasses to plant in our homes. Similarly, we may know all the crops on our farms, but fail to identify the forage crops suitable for our livestock. In most of the learning institutions in East Africa, people always have difficulties with identifying the economic plants growing in their gardens, farms, or compounds. It is, therefore, hoped that this book will solve many of the puzzling questions connected with English, Trade, or Botanical names of the economic plants in the region. Since the book covers both cultivated and useful wild plants, researchers will also find new plants to explore. It is a recommended handbook for all learning institutions where biology is taught. The book covers Type “A” classes of plants which are based on usage and Type “B” classes of plants which are identified using commercial terminology.

The current East African Community (EAC) covers five states with a total surface area (including water bodies) of 1,817,700 sq. km. Opportunities for large-scale commercial farming exist in the region for a wide variety of both food and cash crops.

ACKNOWLEDGEMENTS

I am grateful to my employer, the University of Nairobi, for the continuous moral and financial support of most of my research projects since my employment in 1968. I acknowledge with thanks, the receipt of Ksh 150,000 from the Deans' Committee Research Grant of the University towards research and publication of this project. My special thanks are to the Vice Chancellor, Prof. George A. O. Magoha, whose support has made this second edition of the book a success.

I would also acknowledge, with thanks, the receipt of US\$5,000 from the Inter-University Council for East Africa (IUCEA) in Kampala for both research and publication of this book. My special thanks are to the current Executive Secretary of IUCEA Prof. Muyunga Nkunya for facilitating the application for the grant.

I am grateful to my son, Mr. Steven Kokwaro, who typed the raw data from the original 1979 first edition of the book and the additional new research data and corrections up to June 2011. I acknowledge, with thanks, the contribution of Ms Monica Agunda of the University of Nairobi for the momentous task of typing and typesetting the manuscript from August 2011. Mr. Jonathan Ayayo of the Herbarium, National Museums of Kenya, has played a major role in the final stages of typesetting the manuscript, particularly on the botanical illustrations.

The splendid work on the five East African regional maps was undertaken by a long-time research colleague Mr. Wilson Okach, a retired Senior Cartographer from the Department of Geography, University of Nairobi. My thanks are to Ms Hellen Omondi, the Information Resource Officer at the Agricultural Information Centre Nairobi,

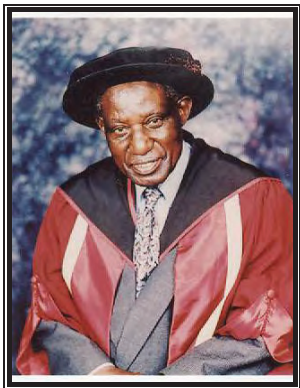
Ministry of Agriculture, who shared with me some valuable data and photographs from various field stations. I am also grateful to the Kenya Government's Ministry of East Africa Community for providing valuable statistical data on the region's environment, agriculture, and demography.

I am most grateful to Dr. Geoffrey Mwachala, Director of Research and Collection, National Museums of Kenya for proofreading the manuscript and making valuable suggestions.

Last but not least, I thank the Kenya Literature Bureau for allowing me to transfer the rights to publish the second edition of the book to the University of Nairobi Press.

JOHN O. KOKWARO
University of Nairobi
November 2013

DEDICATION I



Professor David Peter Simon Wasawo

M.A. (Oxon, 1952), Ph.D. (London, 1959)

D.Sc. Honoris Causa (Kenyatta, 1993)

D.Sc. Honoris Causa (Nairobi, 1999)

Wishing you a happy 90th birthday which was celebrated on 17th May 2013. This is from all past and present science students and academic staff at the following institutions where you served: Makerere College (University), Uganda (1953-1965); University of Nairobi, Kenya (1965-1971, 1998-2005); Great Lakes University of Kisumu, Kenya (Chancellor, 2006-2013).

A brilliant scholar, David Wasawo graduated with an M.A. degree in Zoology in 1952 from Oxford University (the oldest and most prestigious British University) and was the first East African to be awarded a degree in science. Between 1953 and 1959 Prof. Wasawo undertook extensive research on *Alma emini* (an Oligochaeta) culminating into the award of a Ph.D. degree in 1959 by the University of London. Concurrently, he carried out studies on the lungfish (*Protopterus aethiopicus*) in Lake Victoria.

His teaching career at Makerere University spans between 1953 and 1965 where he went through all the academic

ranks to full Professor and Head of the Department of Zoology. Between 1962 and 1965 Prof. Wasawo served as Vice Principal of Makerere University College, being the first East African to hold that post. Prof. Wasawo transferred to the University College Nairobi in 1965 in an administrative capacity as the first Deputy Principal of the institution. He took early retirement from the University of Nairobi in 1971 and joined the United Nations.

Prof. Wasawo has had a most distinguished academic career in Kenyan history from 1953 to the present. He is an eminent scholar and a first class scientist; a dedicated and brilliant University professor who has contributed immensely to the development of biological sciences in Kenya, East Africa and Africa for nearly six decades. It is for these reasons that I, Prof. John Kokwaro, dedicate this modest publication to you as you celebrate your 90th birthday.

May the Almighty God bless you abundantly!

DEDICATION II AND IN MEMORIAM



PROFESSOR THOMAS RISLEY ODHIAMBO, B.A., M.A. Ph.D. (Cantab)

4th February 1931 to 26th May 2003

Founder Chairman and Fellow, Kenya National Academy of Sciences
Founder President and Fellow, African Academy of Sciences

A great Kenyan and African scientist of the 20th century!

Thomas Odhiambo attended his secondary education at Maseno School (1946-1949), completing his form four class in Division I (Cambridge School Certificate). Between 1950 and 1953, he enrolled as a science student at Makerere College in Kampala majoring in Botany and Zoology. Unfortunately, there were no degree programmes at Makerere during that time but he was awarded a Diploma in Science in 1953. He joined the Kericho Tea Research Institute as an entomologist for three years. Thereafter, he transferred to both Serere and Kawanda Agricultural Research Stations in Uganda for another three years. In 1959, Odhiambo was awarded a scholarship to Cambridge University in the UK, enrolling for B.A. and M.A. in natural sciences and later for a Ph.D. in Insect Physiology (thesis on the Reproductive Physiology of the Desert Locust). It was

under the supervision of Prof. Vincent Wigglesworth, who described Odhiambo's Ph.D. thesis as "a phenomenally productive thesis from the best student I have ever supervised". The thesis thereafter produced a series of 14 journal papers.

Dr. Odhiambo completed his Ph.D. degree at Cambridge in 1965, returned to Kenya and took up the position of Lecturer at the Department of Zoology, University College Nairobi. He rose through the academic ranks and became the Acting Head and Reader in 1969. At the newly constituted University of Nairobi in 1970, Dr. Odhiambo was appointed the Founding Professor and Head of the new Department of Entomology (1970-1977) and also the Founding Dean of the Faculty of Agriculture (1970-1971). He was retained as Honorary Professor of Entomology (1977-2003).

While still a staff member of the University of Nairobi, Prof. Odhiambo launched the International Centre of Insect Physiology and Ecology (ICIPE) in 1970 at Chiromo Campus of the University. By 1977, ICIPE had constructed its permanent structures and had been given a charter as an international organisation by the Kenya Government. By 1986, ICIPE was converted into an international organisation as defined by a charter signed by more than 10 nations. It was in the same year that a major field station, ICIPE Mbita Point Field Station in Nyanza, was established. By this time, however, ICIPE had outgrown its physical facilities at Chiromo Campus.

Under the great leadership of ICIPE's founding Director, Prof. Odhiambo, negotiations began with the Kenya Government to move ICIPE to a more suitable site. The Government identified a suitable piece of land at Kasarani in Nairobi for the construction of the new ICIPE

headquarters. The construction commenced immediately and in 1990 ICIPE moved to its present magnificent international headquarters at Kasarani in Nairobi. At present, ICIPE collaborates with over 160 organisations around the world. ICIPE has some of the best physical facilities for research and development (R&D) in Africa. One of the major achievements of ICIPE is the African Regional Postgraduate Programme in Insect Science (ARPPIS) established by Prof. Odhiambo in 1983.

Prof. Odhiambo recognised the importance of scientific academies and founded the following:

1. Kenya National Academy of Sciences (KNAS), Nairobi, (Founder Chairman and Fellow, 1982-1994).
2. African Academy of Sciences (AAS), Nairobi, Kenya (Founder President and Fellow, 1986-1999).

Selected Honours for Prof. Thomas Risley Odhiambo

1. Gold Mercury International Award, 1982.
2. Gold Medal Award from International Congress of Plant Protection, 1983.
3. Albert Einstein Gold Medal, 1991.
4. African Academy of Sciences Prize for distinguished service, 1995.
5. World Bank – IMF Africa Club Distinguished Scientific Award, 1998.
6. International Scientific Council for Trypanosomiasis Research and Control (ISCTRC) Silver Jubilee Award of the African Union (AU), 2000.

7. Makerere University's Science and Technology Park Kampala (2008), named in honour of the late Prof. Thomas R. Odhiambo of Kenya, an outstanding Makerere alumnus extraordinaire.

Honorary degrees (Honoris Causa) conferred on Prof. Thomas Risley Odhiambo by various universities globally

1. Ph.D., University of Oslo, Norway, 1986.
2. D.Sc. University of Massachusetts, USA, 1990.
3. Doctor of Humane Letters, John Hopkins University, USA, 1991.
4. Doctor of Laws, Notre Dame University, USA, 1992.
5. D.Sc. University of Eastern Africa at Baraton, Kenya, 2002.
6. D.Sc. Jomo Kenyatta University of Agriculture and Technology, Kenya, 2003.

Summary

The year 2013 marks the 10th anniversary of the late Professor Thomas R. Odhiambo, a great Kenyan and African Professor, scientist, and scholar of the 20th century, who was called to be with the Lord on 26th May, 2003. Fondly remembered by your science students, staff, and colleagues at the University of Nairobi, ICIPE, AAS, KNAS, and Africa in general.

Rest in peace — Wuod Alego thurgi Ker Barack Obama.

ABOUT THE AUTHOR



Professor John O. Kokwaro

B.Sc. (Addis Ababa)

M.Sc., P.D. (Uppsala)

D.Sc. (Nairobi)

Professor John Kokwaro is currently Emeritus Professor (Botany) at the School of Biological Sciences, University of Nairobi. He is a distinguished Kenyan Scientist who has taught and undertaken leading research projects in Botany and related plant sciences at the University since August 1968. Born in Gem, Nyanza Province in Kenya, the young Kokwaro had his high school education at Bugema Missionary College (currently Bugema University) in Uganda, taking his Cambridge School Certificate Examination (Form IV) in 1960.

From September 1961, Kokwaro was awarded an Ethiopian Government scholarship to study Agriculture at the American-sponsored College of Agriculture in Ethiopia. Upon his graduation from Addis Ababa, Kokwaro was recruited as Research Officer at the East African Herbarium (Nairobi), East African Community. Kokwaro had a special interest in the field of Plant Taxonomy and became the first East African to be awarded a full Swedish Government

(SIDA) postgraduate scholarship to Uppsala University in Sweden in 1966. During his postgraduate training, Kokwaro spent several months every year at the Royal Botanic Gardens, Kew, in U.K., revising selected plant families of East Africa, for both his M.Sc. and Ph.D. degree theses. His postgraduate studies Supervisor, the late Prof. Olov Hedberg was a specialist on the African montane flora. Kokwaro therefore, became the first Kenyan to graduate with a Ph.D. degree in Plant Taxonomy in 1969. Parts of both his M.Sc. and Ph.D. theses were later published as Valerianaceae (1968) and Geraniaceae (1971) respectively for the Flora of Tropical East Africa by Kew Herbarium, Royal Botanic Gardens, Kew, U.K. A prolific writer and great Kenyan Botanist, Kokwaro later revised and published two other plant families (books) for the same Flora of Tropical East Africa, namely Rutaceae (orange family, 1982) and Anacardiaceae (Mango family, 1986). It should be noted that it is the British botanists, namely the late Mr. J.B. Gillett, the late Dr. B. Verdcourt and Dr. R. M. Polhill, all former staff members at the EA Herbarium in Nairobi, who supported Kokwaro's postgraduate training at Uppsala University and his research projects at Kew Herbarium. Prior to publishing all the four flora (FTEA) parts (books) he had published over 70 refereed journal papers, including new taxa in the Kew Bulletin. He is a Fellow of the Linnaean Society of London (FLS) since 1968.

Between September 1973 and May 1974 Prof. Kokwaro became the first Kenyan University Lecturer to be awarded Senior Fulbright Post-doctoral Research Fellowship, spent at both Harvard University Herbaria, Cambridge, Massachusetts and Missouri Botanical Garden, St. Louis, Missouri, U.S.A.

John Ongayo Kokwaro, a great Kenyan Scientist born in the 20th Century but excelled in his scholastic achievement in the 21st Century. Prof. Kokwaro crowned his academic achievement by being the first Kenyan scholar to present and defend his Doctor of Science (D.Sc.) degree thesis titled *"Systematics and Ethnobotany of Selected Taxa and Ecosystems of East Africa"*, at the University of Nairobi, and the degree awarded in October 2008.

Membership of selected professional societies and activities

1. Fellow, Linnaean Society of London (FLS), Society for leading Plant Taxonomists (1968 – present, Emeritus).
2. Life member, East African Natural History Society (1968 – present), (est. 1909, Nairobi). Chairman 1983 – 1989.
3. Founder Fellow, Kenya National Academy of Sciences (FKNAS), (1986 – present).
4. Chairman, Kenya Fulbright Alumni Association (1991-1997), Nairobi.
5. Member, New York Academy of Sciences (1994-2001), New York.
6. Editorial Board Member, *Journal of Economic Botany* (1978-1995), Associate Editor (1991-1995), New York.
7. Fellow, African Academy of Sciences (FAAS), (1995-present) Nairobi. The first Executive Director of AAS (1994-1996) on secondment from the University of Nairobi.
8. Member, Editorial Board, *African Journal of Ecology* (1995-present), Blackwell Publishing Ltd., Oxford, U.K.

Summary of other book publications by the author

1. *Luo-English Biological Dictionary*, Second Edition, pp. 228, 2013, East African Educational Publishers Ltd., Nairobi. Co-authored with Prof. Timothy Johns.
2. *Medicinal Plants of East Africa*, Third Edition, pp. 513, 2009, University of Nairobi Press, Nairobi.
3. *Luo Biological Dictionary*, pp. 264, 1998, East African Educational Publishers Ltd., Nairobi.
4. *Flowering Plant Families of East Africa, An Introduction to Plant Taxonomy*, pp. 292, 1994, East African Educational Publishers Ltd., Nairobi.
5. *Medicinal Plants of East Africa*, Second Edition, pp. 401, 1993, Kenya Literature Bureau, Nairobi.
6. *Anacardiaceae (Mango Family)*, pp. 60, 1986, Kew Herbarium, Royal Botanic Gardens, Crown Agents, London.
7. *Rutaceae (Orange Family)*, pp. 52, 1982, Kew Herbarium, Royal Botanic Gardens, Crown Agents, London.
8. *Classification of East African Crops*, pp. 90, 1979, Kenya Literature Bureau, Nairobi.
9. *Medicinal Plants of East Africa*, pp. 384, 1976, East African Literature Bureau, Nairobi.
10. *Luo-English Botanical Dictionary*, pp. 200, 1972, East African Publishing House, Nairobi.
11. *Geraniaceae (Pelargonium Family)* pp. 25, 1971, Kew Herbarium, Royal Botanic Gardens, Crown Agents, London.

Section 1

INTRODUCTION

INTRODUCTION

The introduction to the book presents a brief statistical analysis of East Africa's environment, geographical location, surface area, temperatures, agricultural production, and demography. It should be noted that all the data presented cover up to the year 2009 and the projected population for mid-2011 was, therefore, 133 million persons. The total area of the region, including water bodies is 1.85 million sq. km.

1.0 ENVIRONMENTAL STATISTICS

This section presents data on the geographical location of the five member countries of the East African Community (EAC), total agricultural land, total cultivated land, land under plantations, and land under other vegetation coverage (Maps 1-5). The EAC region comprising of Burundi, Tanzania, Uganda, Kenya, and Rwanda is located between 5°30"N 12°S and 28°45"E 41°50"E as indicated in Table 1a. The region has a total surface area of 1,817.7 thousand square kilometres with Burundi, Tanzania, Uganda, Kenya, and Rwanda accounting for 1.5 percent, 51.7 percent, 13.3 percent, 32.1 percent, and 1.4 percent respectively.

As shown in Table 1b, the region has a total land area (excluding water bodies) of 1,716.0 thousand square kilometres. During the year 2009, the EAC total land for

agriculture was estimated at 124,718 thousand hectares of which Burundi, Tanzania, Uganda, Kenya, and Rwanda accounted for 1,135, 48,100, 16,275, 56,914, and 2,294 thousand hectares respectively (Table 1c). Under forest and tree resources, Rwanda has the highest plantation forest coverage of 5.3 thousand square kilometres followed by Burundi (1.6 thousand square kilometres), Tanzania (1.3 thousand square kilometres), Kenya (1.3 thousand square kilometres), and Uganda (0.3 thousand square kilometres). On the other hand, the United Republic of Tanzania has the largest coverage under natural forest cover of 352.6 thousand square kilometres and Burundi has the least at 1.0 thousand square kilometres as shown in Table 1d. The region's rainfall is shown in Table 1e and 1f respectively.

Table 1a Location of East African Community Partner States

State	Latitude		Longitude	
Burundi	9°50"S	4°28"S	28°05"E	30°53"E
Tanzania	1°29"S	12°S	29°E	41°E
Uganda	4°12"S	1°29"S	29°34"E	35°0"E
Kenya	5°30"N	4°30"S	33°50"E	41°50"E
Rwanda	1°04"S	2°51"S	28°51"E	31°15"E
East Africa	5°30"N	12°S	28°45"E	41°50"E

Source: Partner states

Table 1b East Africa Total Surface Area 2009, (000 sq. km.)

State	Including water bodies	Excluding water bodies
Burundi	27.8	25.0
Tanzania	939.3	886.3
Uganda	241.6	199.8
Kenya	582.7	580.7
Rwanda	26.3	24.2
East Africa	1,817.7	1,716.0

Source: Partner states

Table 1c East Africa Agricultural Land Use (000 hectares)

Indicator	State/Year	2002	2003	2004	2005	2006	2007	2008	2009
Total agriculture land	Burundi	1,078	1,105	1,135	1,135	1,135	1,135	1,135	1,135
	Tanzania	48,100	48,100	48,100	48,100	48,100	48,100	48,100	48,100
	Uganda	15,899	15,899	15,899	16,275	16,275	16,275	16,275	16,275
	Kenya	56,914	56,914	56,914	56,914	56,914	56,914	56,914	56,914
	Rwanda	2,294	2,294	2,294	2,294	2,294	2,294	2,294	2,294
	East Africa	124,286	124,312	124,342	124,718	124,718	124,718	124,718	124,718
Total cultivated area	Burundi	-	-	-	-	-	-	-	-
	Tanzania	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500
	Uganda	9,453	9,453	9,453	9,902	9,902	9,902	9,902	9,902
	Kenya	-	-	-	-	-	-	-	-
	Rwanda	845	829	848	852	868	846	1,716	1,735
	East Africa	-	-	-	-	-	-	-	-

Source: Partner states

Table 1d East Africa Forest and Tree Resources (sq. km.)

Indicator	State/Year	2002	2003	2004	2005	2006	2007	2008	2009
Plantation forest cover	Burundi	1,510	1,525	1,560	1,690	1,690	1,610	1,620	1,800
	Tanzania	1,349	1,349	1,349	1,349	1,349	1,349	1,349	1,349
	Uganda	233	233	233	331	331	331	331	332
	Kenya	1,210	1,251	1,323	1,323	1,323	1,323	1,323	1,323
	Rwanda	3,067	-	-	-	-	5,279	5,279	3,374
East Africa		7,369	-	-	-	-	9,891	9,902	8,178
Natural forest cover	Burundi	1,176	1,076	1,016	1,016	1,016	1,016	1,016	1,016
	Tanzania	400,238	400,238	400,238	400,238	352,570	352,570	352,570	352,570
	Uganda	7,582	7,582	7,582	6,867	6,867	6,867	6,867	6,867
	Kenya	16,850	16,850	16,850	16,850	16,850	16,850	16,850	16,850
	Rwanda	2,339	2,339	-	-	-	1,270	1,270	2,156
East Africa		428,185	428,185	-	-	-	378,573	388,475	387,637
Other forest vegetation cover	Burundi	1,681	1,698	1,737	1,754	1,754	1,798	1,798	1,798
	Tanzania	-	-	-	-	-	-	-	-
	Uganda	32,601	32,601	32,601	29,528	29,528	29,528	29,528	29,528
	Kenya	1,240	1,240	1,240	1,240	1,240	1,240	1,240	1,240
	Rwanda	-	-	-	-	-	-	2,407	-
East Africa		-	-	-	-	-	-	-	-

Source: Partner states

Table 1e East Africa Minimum and Maximum Rainfall (mm)

Indicator	State/Year	2002	2003	2004	2005	2006	2007	2008	2009
Minimum	Burundi	64	45	60	68	85	75	80	82
	Tanzania	69	42	35	32	68	60	-	-
	Uganda	-	21	13	11	21	20	14	25
	Kenya	-	-	-	-	-	-	-	-
	Rwanda	-	-	-	11	9	19	24	-
	East Africa	-	-	-	-	-	-	-	-
Maximum	Burundi	140	125	123	133	144	137	146	144
	Tanzania	871	577	744	554	937	716	-	-
	Uganda	-	216	219	209	256	233	257	210
	Kenya	-	-	-	-	-	-	-	-
	Rwanda	-	-	-	208	208	179	183	-
	East Africa	-	-	-	-	-	-	-	-

Source: Partner states

Table 1f East Africa Average Minimum and Maximum Temperature (°C)

Indicator	State/Year	2002	2003	2004	2005	2006	2007	2008	2009
Minimum	Burundi	17	17	17	17	17	17	17	17
	Tanzania	12	12	12	12	12	12	11	11
	Uganda	-	17	17	18	18	17	17	16
	Kenya	-	-	-	-	-	-	-	-
	Rwanda	-	-	-	13	13	13	13	-
	East Africa	-	-	-	-	-	-	-	-
Maximum	Burundi	25	25	25	25	25	25	25	25
	Tanzania	31	32	31	31	31	31	31	32
	Uganda	-	29	29	30	29	28	28	31
	Kenya	-	-	-	-	-	-	-	-
	Rwanda	-	-	-	26	26	26	26	-
	East Africa	-	-	-	-	-	-	-	-

Source: Partner states

2.0 AGRICULTURAL PRODUCTION

The information provided in this section is based on harvested quantity (in tons) for major crops. In spite of a gradual decline over the years, coffee remains the single crop with the largest acreage in the region followed by tea (Table 2a). While there seems to be a slight recovery in coffee production in the last few years, tea production has been on a declining trend (Table 2b).

3.0 MAJOR AGRICULTURAL CROPS AND FORESTRY PRODUCTS

Opportunities for large-scale commercial farming exist in the region for a wide variety of food and cash crops. The key investment opportunities are described in this section.

Tea

Tea is a major export commodity in the East African Community. It is also a major employer particularly in farming, marketing, transport, and retailing. Opportunities for investment exist in tea plantations and in tea processing and packaging for both domestic and export markets especially under the Manufacturing Under Bond and Export Processing Zone schemes. In the tea sector, specific investment opportunities in Partner States are as follows:

Burundi

Burundi is in the process of privatising tea production and increasing the area under cultivation.

Table 2a Land area Coverage for Selected Crops (000 hectares)

Indicator	State/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coffee	Burundi	-	-	69	68	71	72	74	74	74
	Tanzania	58	54	76	39	34	46	34	58	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	170	170	170	170	170	170	163	155	160
	Rwanda	25	26	27	29	30	31	32	28	28
Tea	Burundi	8	9	9	9	9	9	9	9	9
	Tanzania	21	21	21	22	23	22	23	23	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	24	30	131	137	141	147	149	158	158
	Rwanda	12	12	2	12	12	12	12	13	13
Sugar cane	Burundi	-	-	-	2	3	3	3	3	3
	Tanzania	-	31	40	42	48	48	49	-	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	111	121	123	132	145	148	159	169	154
	Rwanda	3	3	2	3	3	4	4	4	4
Cotton	Burundi	3	4	4	5	5	4	5	5	5
	Tanzania	123	149	189	140	342	245	486	201	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	-	-	-	-	-	-	-	-	-
	Rwanda	NA	NA	NA	NA	NA	NA	NA	NA	NA

...../cont.

Table 2a (cont.)

Tobacco	Burundi	-	-	-	1	1	0.5	0.4	0.5	0.5
	Tanzania	25	28	28	34	47	-	-	-	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	-	-	-	-	-	-	-	-	-
	Rwanda	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source: Partner states

Table 2b Production for selected crops (000 tons)

Indicator	State/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sisal	Burundi	-	-	-	-	-	-	-	-	-
	Tanzania	46	46	50	42	60	40	42	44	-
	Uganda	-	-	-	-	-	-	-	-	-
	Kenya	-	-	-	-	-	-	-	-	-
	Rwanda	NA	NA	NA	NA	NA	NA	NA	NA	NA
Coffee	Burundi	25	21	36	44	12	38	13	30	16
	Tanzania	58	54	76	39	34	46	34	58	40
	Uganda	197	204	151	170	158	133	175	219	196
	Kenya	52	52	55	48	45	48	53	42	57
	Rwanda	18	20	14	29	19	26	15	21	16
East Africa		351	350	333	330	268	291	290	369	325

.../cont.

Table 2b (Cont.)

Indicator	State/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Tea	Burundi	44	33	35	38	39	31	34	32	32
	Tanzania	119	111	132	128	133	123	159	35	33
	Uganda	33	34	36	36	38	34	45	46	49
	Kenya	295	287	295	325	329	311	370	346	314
	Rwanda	18	15	16	14	17	17	20	20	21
East Africa		509	480	514	541	555	516	628	479	449
Sugar Cane	Burundi	180	151	171	176	168	168	177	189	178
	Tanzania	1,334	1,523	1,813	2,342	2,346	2,501	2,041	3,500	-
	Uganda	1,510	1,893	1,985	2,180	2,161	2,217	2,173	2,639	3,476
	Kenya	3,551	4,501	4,204	4,661	4,801	4,933	5,204	5,112	5,611
	Rwanda	6	7	7	8	10	10	18	18	-
East Africa		6,582	8,075	8,181	9,367	9,486	9,829	9,613	11,458	9,265

Source: Partner states

Kenya

Only about 2% total tea exports are value added hence an enormous value addition and consequent branding opportunity exists. Kenya primarily produces black teas hence the potential for diversification to other products namely green teas, orthodox teas, ready-to-drink teas (juice tea), instant tea, and organic tea among others. There is also potential for the production of specialty teas for specific niche markets and for direct sales.

Rwanda

Rwanda's tea sector has potential for growth in the following areas:

- Privatisation of tea factories at Gisakura, Kitabi, Mata, Mulindi and Shagasha.
- Construction of a new factory in the Karongi district in Western Rwanda.
- Construction of a new factory at Gatere in the Nyamasheke district in Western Rwanda.
- Construction of a new factory at Mushubi in the Nyamagabe district in Western Rwanda.

Tanzania

Opportunities exist in the opening up of new plantations in Mbeya, Iringa, Kagera, Mara, and Tanga regions.

Uganda

Tea production can be increased by planting high yielding varieties and use of fertilisers for maintenance of soil fertility.

Coffee

Coffee is another significant foreign exchange earner in the East African Community. The region produces high quality Arabica and Robusta coffees. Investment potential exists in the following areas:

- Growing of Arabica and Robusta coffee.
- Coffee processing and packaging.
- Manufacture of coal from coffee husks.
- Production for specialty markets such as the organic coffee market.
- Production of washed Robusta coffee, which has a higher earning potential as compared with dry processed coffee.
- Coffee roasting.

In the coffee sector specific investment opportunities in Partner States include:

Burundi

Export of Arabica and Robusta coffee.

Tanzania

- Acquisition of existing coffee farms in coffee growing areas such as Kilimanjaro, Arusha, Tanga, Kagera, Ruvuma, Mbeya, Iringa, and Rukwa.
- Opening up new large-scale coffee estates in Ruvuma, Mbeya, Iringa, Kigoma, Mara, Ukerewe, and Manyara with emphasis on organic coffee.

Uganda

Potential exists in processing coffee into finished products for local, regional, and international markets.

Rice

Opportunities exist in large-scale rice production, processing, packaging, and branding for the local and regional markets. The Lake Victoria Basin offers potential for rice production with the best example being the Dominion Farms Ltd. at Yala Swamp of Siaya County in Kenya.

Wheat

Opportunities exist in production, milling, flour packaging and marketing of wheat. Tanzania offers investment opportunities in large-scale production of wheat in Arusha, Manyara, Iringa, Mbeya, Kigoma, Rukwa, and Kilimanjaro. Wheat growing areas in Kenya include the scenic Rift Valley regions of Uasin Gishu, Narok, Marakwet, Elgeyo, Londiani, Molo, Nakuru, and Timau areas.

Bananas

Opportunities abound in banana production, banana wine processing and packaging, and introduction of new varieties. Tanzania offers banana production opportunities in Kagera, Kilimanjaro, Morogoro, and Mbeya. Uganda has export potential in dessert bananas such as Apple bananas (Ndiizi) and Gros Michel bananas (Bogoya). Uganda offers investment opportunities for setting up commercial farms to produce and export apple bananas to the European market.

Cotton

The demand for cotton has increased recently with the growth of the textile and apparels industry in response to the opportunities provided by the US African Growth and Opportunity Act (AGOA). Potential exists in the following areas:

- Establishment of large-scale cotton production farms.
- Value addition to lint.
- Expansion and improvement of current cotton farming systems.
- Marketing and exporting of organic cotton.
- Pesticide formulators and mixers to control diseases and pests.

Sisal

Opportunities exist in the region in sisal spinning and weaving, production of alcohol, production of particle boards, and biogas and electricity generation.

Opportunities also exist in the production of the following: citric acid, pharmaceuticals, animal feeds, organic fertiliser, handicrafts (bags, rugs, door mats, and curtains), sisal mattresses and padding for furniture and car seats, sisal polishing cloth, buffing cloth for polishing metals in industrial settings, sisal composites in automotives, and boat furniture. There are also opportunities in the establishment of pulp factories.

Food Crops and Oil Seeds

The East African Community countries produce a wide range of food crops and oil seeds. These commodities include cereals (millet, sorghum, maize, and rice) and other grains (beans, pigeon peas, and other pulses) which can be produced several times a year. These products are consumed in the domestic markets as well as exported to regional markets. There is investment potential in the production and export of sesame seed, sunflower seed, groundnuts, cotton seed, pressed organic oils, sugar, rice, and wheat.

Sugar

Opportunities exist in the following areas:

- Production of industrial refined sugar.
- Provision of loans or credit to the small- and medium-scale outgrowers.
- Rehabilitation of sugar plantations and factories.
- Use of bagasse for electricity generation, production of charcoal briquettes, and production of writing paper and particle board.

- Use of molasses for ethyl alcohol production, production of vinegar and acetic acid, fertiliser production, livestock feeds supplement, rectified spirits, rum, and yeast.

Kenya offers opportunities in construction of new factories in high potential areas such as the Tana River Delta, Busia, and Transmara. Tanzania offers opportunities in the establishment of new sugarcane estates in Coast, Ruvuma, Kagera, Mara, Mbeya, Kilimanjaro, and Kigoma regions and in sugar production factories.

Groundnuts (Peanuts)

In most parts of East Africa, groundnuts are sold in small quantities by small-scale vendors. A small amount of processing is done to produce either roasted and seasoned nuts or peanut butter. There is potential for groundnut processing factories to produce peanut butter and peanut oil for use in processed foods, cosmetics, paints, and finishes.

Cashew Nuts

Opportunities exist in cashew nut processing industries and marketing particularly in the coastal regions.

Pyrethrum

Investment opportunities exist in seed production, plantation farming, and processing of pyrethrin insecticides and pesticides. Pyrethrum extracts refineries can be established for production of paints and medicinal and pharmaceutical preparations such as vaccines, antibiotics, and vitamins.

Tobacco

Opportunities exist in the establishment of tobacco farms, fuel efficient central curing barns and furnaces, construction of processing factories, and production of fertilisers, insecticides, and sprayers.

Forest and Forestry products

The East African Community Partner States have large areas of forest and woodlands. Some of these areas have been gazetted as forest reserves. Some are under plantation forestry while others are under water catchments. Softwood and hardwood plantations offer good opportunities for the establishment of wood-based industries like saw-milling, partial boards manufacturing, furniture making, and joinery.

Kenya has one major plant producing paper and paper board from forest products. Investment opportunities exist in the production of paper from other raw materials such as bagasse, sisal waste, straw, and waste paper. Tanzania offers the following opportunities: production of Resins in Iringa, Mwanza, Ruvuma, Coast, Morogoro, Kagera, and Lindi; production of Gum Arabic in Singida, Shinyanga, Manyara, Arusha, and Tabora; vegetable tanning in Iringa, Mbeya, Kilimanjaro, Arusha, Manyara, and Tanga.

Uganda offers the following opportunities:

- Planting palm trees and processing of palm oil.
- Planting of soft wood plantations for timber and poles.
- Planting of soft wood plantations for pulp production.
- Planting trees for medicinal purposes.

- Value added products from both hard and soft wood.
- Tourism and recreation.

Table 3a Summary of major agricultural crop exports from and within East Africa

Kenya	Tanzania	Uganda	Rwanda	Burundi
Tea	Coffee	Coffee	Tea	Coffee
Horticulture	Cotton	Tea	Coffee	Tea
Coffee	Tea	Cocoa	Fruits	Sugar
Fruits	Tobacco	Spices	Vegetables	Cotton
Vegetables	Cashew nuts	Cotton		
Sisal	Cloves	Horticulture		
	Sisal	Fruits		
		Vegetables		

4.0 DEMOGRAPHY

The information in this section is mainly obtained from censuses and demographic and health surveys. Mid-year population figures are based on population census as well as annual population growth rates, fertility rates, mortality rates, and migration.

During the year 2009, the mid-year population projection was estimated at 129.5 million persons with a growth of 2.5 percent (Tables 4a–c). Uganda recorded the highest growth of 3.2 percent while Kenya recorded the least growth rate of 1.3 percent. This was, however, attributed to new data from the 2009 Kenya Population and Housing Census. The 2011 mid-year population projection was estimated at 133 million persons.

Table 4a Mid-Year Population (million persons)

State/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burundi	6.7	6.8	7.0	7.2	7.4	8.0	8.0	8.1	8.2	8.2
Tanzania	32.8	33.9	34.4	35.3	36.3	37.3	38.0	39.4	40.7	41.9
Uganda	22.6	23.3	24.1	24.9	25.7	26.5	27.4	28.2	29.6	30.7
Kenya	30.4	31.3	32.2	33.2	34.2	35.1	36.1	37.2	38.3	38.6
Rwanda	-	-	8.1	8.3	8.6	8.8	9.1	9.3	9.8	10.1
East Africa	-	-	105.8	108.9	112.1	115.7	118.6	122.1	126.6	129.5

Source: Partner states

Table 4b Mid-year Population Density (persons per square kilometre)

State/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burundi	239.4	246.0	252.6	259.1	265.3	271.7	278.2	285.7	293.2	330
Tanzania	37.1	38.2	39.0	39.8	41.0	42.0	43.1	45.0	45.5	47.0
Uganda	115.8	119.6	123.0	127.5	131.7	135.9	137.1	141.1	148.1	153.5
Kenya	52.3	53.9	55.4	57.2	58.9	60.4	62.2	64.0	67.3	67.6
Rwanda	-	-	321.0	329.7	338.6	347.8	357.3	368.0	373.2	383.9
East Africa	-	-	61.7	63.4	65.4	67.4	69.1	71.1	73.1	75.5

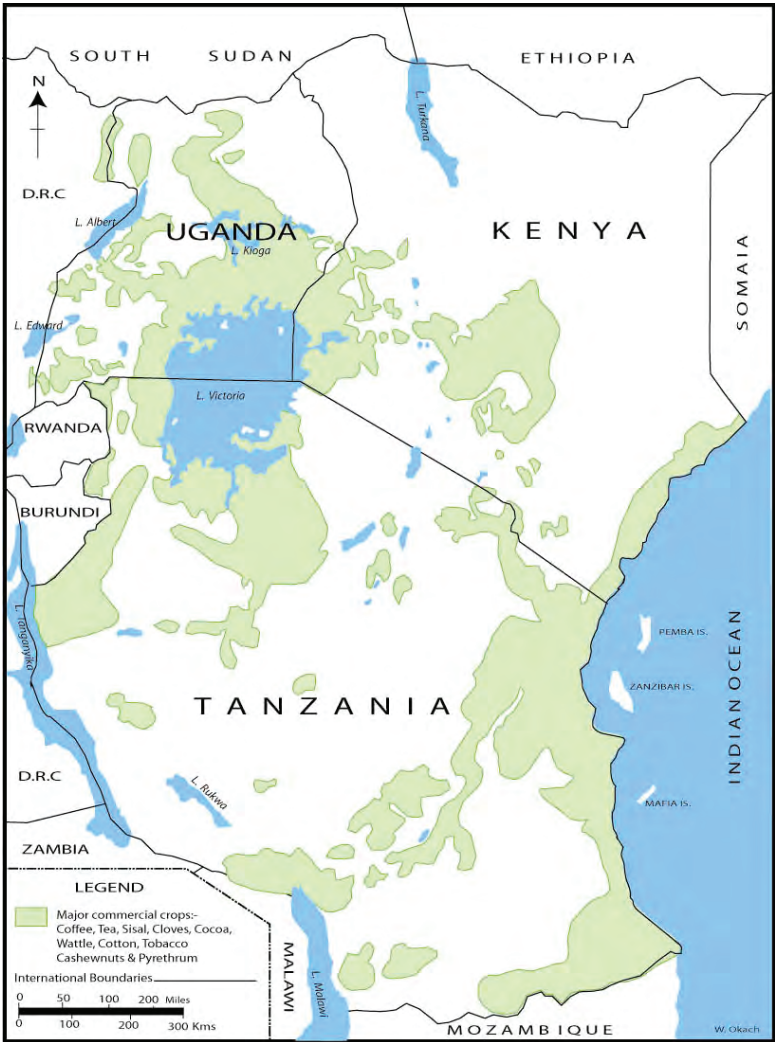
Source: Partner states

Table 4c Annual Population Growth Rate (percent)

State/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Burundi	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.4
Tanzania	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Uganda	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Kenya	2.9	3.0	2.9	3.0	2.9	2.8/	2.8	2.7	3.0	1.3
Rwanda	2.6	2.6	2.6	3.1	2.7	2.6	3.2	2.7	2.8	2.9
East Africa	2.8	2.9	2.9	3.0	2.9	2.8	3.0	2.8	2.9	2.5

Source: Partner states

Map 3 Composite Pattern of Major East African Commercial Crops (1979)



Source: Department of Geography, University of Nairobi, 2013.

Map 4 Composite Pattern of Major East African Subsistence cum Local Commercial Crops (1979)



Source: Department of Geography, University of Nairobi, 2013.

Map 5 Composite Pattern of Important East African Subsistence Crops (1979)



Source: Department of Geography, University of Nairobi, 2013.

Section 2

TYPE A CLASSES: Classification Based on Usage

CLASS 1: CEREALS OR GRAIN CROPS

Cereals or grain crops are in most countries the most important sources of plant-based food for humans, usually providing their staple diet. The word “cereal” is derived from “Ceres”, the goddess considered as the giver-of-grain by the Romans. Cereals provide human food directly and also indirectly as fodder for domestic livestock. All the grain crops found in East Africa belong to the grass family *Poaceae* of the monocotyledon group. The grain is the characteristic fruit of the grass called a caryopsis in which the seed coat is fused with the ovary wall. Grains usually occur in somewhat concentrated clusters and store large quantities of food material, chiefly carbohydrates. Other food substances found in grains, but in smaller quantities include protein, oil, minerals, and vitamins (Figures 1 – 3).

Examples of major cereals

Common name	Botanical name
Barley	<i>Hordeum vulgare</i>
Corn	<i>Zea mays</i>
Dura	<i>Sorghum bicolor</i>
Grain sorghum	<i>Sorghum bicolor</i>
Great millet	<i>Sorghum bicolor</i>
Guinea corn	<i>Sorghum bicolor</i>
Maize	<i>Zea mays</i>
Millet (African or finger)	<i>Eleusine coracana</i>
Rice	<i>Oryza sativa</i>
Sorghum	<i>Sorghum bicolor</i>
Wheat	<i>Triticum aestivum</i>

Examples of minor cereals

Common name	Botanical name
Job's tears	<i>Coix lachryma-jobi</i>
Millet (Brown corn)	<i>Panicum miliaceum</i>
Millet (Bulrush)	<i>Pennisetum typhoideum</i>
Millet (Common)	<i>Panicum miliaceum</i>
Millet (Foxtail)	<i>Setaria italica</i>
Millet (Italian)	<i>Setaria italica</i>
Millet (Pearl)	<i>Pennisetum typhoideum</i>
Millet (Poroso)	<i>Panicum miliaceum</i>
Oats	<i>Avena sativa</i>
Teff	<i>Eragrostis tef</i>

CLASS 2: OTHER STARCH CROPS

Apart from the cereals, there are other crops which provide starchy food. This group of plants store their food material in either the roots or fruits. Starch is a mixture of polymers constituted of 1,4 and 1,6-linked glucose units which occur naturally in the plant storage organs already mentioned. There are two forms of starch in plants: one is known as amylose which is a linear polymer, while the other is amylopectin, which is a highly branched polymer. The two forms of starch are polymers of glucose.

Examples of minor cereals

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Examples of major starch crops

Common name	Botanical name	Family
Banana	<i>Musa</i> spp.	Musaceae
Cassava	<i>Manihot esculenta</i>	Euphorbiaceae
Plantain	<i>Musa</i> spp.	Musaceae
Potato	<i>Solanum tuberosum</i>	Solanaceae
Sweet potato	<i>Ipomoea batatas</i>	Convolvulaceae

Examples of minor starch crops

<i>Common name</i>	<i>Botanical name</i>	<i>Family</i>
Breadfruit	<i>Artocarpus altilis</i>	Moraceae
Coco yam (Old)	<i>Colocasia esculenta</i>	Araceae
Coco yam (New)	<i>Xanthosoma sagittifolium</i>	Araceae
Gourd	<i>Lagenaria siceraria</i>	Cucurbitaceae
Jackfruit	<i>Artocarpus heterophyllus</i>	Moraceae
Pumpkin	<i>Cucurbita maxima</i>	Cucurbitaceae
Tannia	<i>Xanthosoma sagittifolium</i>	Araceae
Yam	<i>Dioscorea alata</i> (and other species)	Dioscoreaceae

Starch crops can be subdivided further into the following three sub-classes:

- (a) **Cereal or grain starch crops** : These are fully described in Class 1 and constitute some of the major food crops in the region (Figures 1-3).

- (b) **Root starch crops** : This group is fully described in Class 2 and also in Class 3 (Figures 8 and 9).
- (c) **Fruit starch crops** : This group forms part of Class 2, with the major one being bananas and plantains (see Figure 43).

CLASS 3: ROOT CROPS

Root crops are plants which have swollen roots or underground stems and the majority of them store large quantities of starch. Apart from the cereals, root crops provide a substantial amount of the starch needed in the human diet. Other root crops are primarily for flavouring food and are widely used as spices. In order to understand them better, root crops will be subdivided into the following groups:

- (a) **Stem tuber** is a short terminal portion of an underground stem which has become thickened due to accumulation of reserve food material.

Examples of stem tubers

Common name	Botanical name	Family
Jerusalem artichoke	<i>Helianthus tuberosus</i>	Asteraceae
Potato	<i>Solanum tuberosum</i>	Solanaceae
Yams	<i>Dioscorea</i> spp.	Dioscoreaceae

- (b) **Root tuber** (or tuberous root) is a root which has become thickened due to accumulation of large amounts of stored food (see Figure 8).

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- (b) **Root tuber** (or tuberous root) is a root which has become thickened due to accumulation of large amounts of stored food (see Figure 8).

Examples of root tubers

Common name	Botanical name	Family
Beetroot	<i>Beta vulgaris</i>	Chenopodiaceae
Carrot	<i>Daucus carota</i>	Apiaceae
Cassava	<i>Manihot esculenta</i>	Euphorbiaceae
Radish	<i>Raphanus sativus</i>	Brassicaceae
Sweet potato	<i>Ipomoea batatas</i>	Convolvulaceae

- (c) **Corm** is a swollen base of the stem axis enclosed by the dry, scale-like leaves and is solid with distinct nodes and inter-nodes (see Figure 9).

Examples of corms

Common name	Botanical name	Family
Coco yam (old)	<i>Colocasia esculenta</i>	Araceae
Coco yam (new)	<i>Xanthosoma sagittifolium</i>	Araceae

- (d) **Rhizome** is a thick, horizontal underground stem which sends out shoots above and roots below.

Examples of rhizomes

Common name	Botanical name	Family
Edible canna	<i>Canna edulis</i>	Cannaceae
Ginger	<i>Zingiber officinale</i>	Zingiberaceae
Turmeric	<i>Curcuma longa</i>	Zingiberaceae
Vinzari	<i>Curcuma longa</i>	Zingiberaceae

- (e) **Bulb** is a specialised underground organ consisting of a short, fleshy, usually vertical stem axis and is mainly composed of swollen modified leaves. A common example is the onion (*Allium cepa*) of the Alliaceae family.

CLASS 4: FRUITS

Generally the term fruit evokes the concept of any pleasant-tasting delicacy plucked from a tree or bush, but we get more confused when trying to distinguish between a fruit and a vegetable. Botanically, a fruit is a mature ovary, especially of seed-bearing plants. You may, therefore, find plants like tomato listed as both fruit and vegetable. Many nuts are also listed botanically as fruits, or at least the seeds from fruits freed by removal of hulls consisting of ovarian structure. The following classification, however, will look at fruits in their broader sense of usage primarily as normal fruits. The list of fruits is long since it includes many of those introduced from different parts of the world by the British colonial administration. The British farmers introduced many temperate fruits into the East African highlands and tropical fruits into the rest of the region. Also included in the list are a few popular fruits only known by their vernacular names, for example Mzambarau (see Figures 40-49).

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Examples of major fruits

Common name	Botanical name	Family
Apple	<i>Malus sylvestris</i>	Rosaceae
Avocado	<i>Persea americana</i>	Lauraceae
Banana	<i>Musa</i> spp.	Musaceae
Cape Gooseberry	<i>Physalis peruviana</i>	Solanaceae
Cherimoya	<i>Annona cherimola</i>	Annonaceae
Fig	<i>Ficus carica</i>	Moraceae
Figs	<i>Ficus</i> spp.	Moraceae
Granadilla (Golden)	<i>Passiflora ligularis</i>	Passifloraceae
Granadilla (Sweet)	<i>Passiflora ligularis</i>	Passifloraceae
Grape	<i>Vitis vinifera</i>	Vitaceae
Grapefruit	<i>Citrus paradisi</i>	Rutaceae
Guava	<i>Psidium guajava</i>	Myrtaceae
Jackfruit	<i>Artocarpus heterophyllus</i>	Moraceae
Jambolan	<i>Syzygium cumini</i>	Myrtaceae
Kumquat	<i>Fortunela margarita</i>	Rutaceae
Large-fruited Mandarin	<i>Citrus grandis</i>	Rutaceae
Lemon	<i>Citrus limon</i>	Rutaceae
Lime	<i>Citrus aurantifolia</i>	Rutaceae
Loquat	<i>Eriobotrya japonica</i>	Rosaceae
Mandarin	<i>Citrus reticulata</i>	Rutaceae
Mango	<i>Mangifera indica</i>	Anacardiaceae

.../cont.

Major fruits (cont.)

Melon (Cantaloupe)	<i>Cucumis melo</i>	Cucurbitaceae
Melon (Water)	<i>Citrullus lanatus</i>	Cucurbitaceae
Mulberry (Black or Common)	<i>Morus nigra</i>	Moraceae
Mulberry (White)	<i>Morus alba</i>	Moraceae
Mzambarau	<i>Syzygium cumini</i>	Myrtaceae
Orange	<i>Citrus sinensis</i>	Rutaceae
Orange (Bitter)	<i>Citrus aurantium</i>	Rutaceae
Orange (Marmalade)	<i>Citrus aurantium</i>	Rutaceae
Orange (Seville)	<i>Citrus aurantium</i>	Rutaceae
Orange (Sour)	<i>Citrus aurantium</i>	Rutaceae
Orange (Sweet)	<i>Citrus sinensis</i>	Rutaceae
Papaya or Pawpaw	<i>Carica papaya</i>	Caricaceae
Passion fruit (Purple)	<i>Passiflora edulis f. edulis</i>	Passifloraceae
Passion fruit (Yellow)	<i>Passiflora edulis f. flavicarpa</i>	Passifloraceae
Peach	<i>Prunus persica</i>	Rosaceae
Pear	<i>Pyrus communis</i>	Rosaceae
Pineapple	<i>Ananas comosus</i>	Bromeliaceae
Plantain	<i>Musa</i> spp.	Musaceae
Plum	<i>Prunus salicina</i>	Rosaceae
Pomegranate	<i>Punica granatum</i>	Punicaceae
Pomelo	<i>Citrus grandis</i>	Rutaceae

.../cont.

Major fruits (cont.)

Purple Granadilla	<i>Passiflora edulis f. edulis</i>	Passifloraceae
Shaddock	<i>Citrus grandis</i>	Rutaceae
Strawberry	<i>Fragaria X ananassa</i>	Rosaceae
Tangerine	<i>Citrus reticulata</i>	Rutaceae
Tomato	<i>Solanum lycopersicum</i>	Solanaceae
Tomato (Cherry)	<i>Solanum lycopersicum</i> var. <i>cerasiforme</i>	Solanaceae
Tomato (Tree)	<i>Solanum betaceum</i>	Solanaceae
Youngberry	<i>Rubus strigosus</i>	Rosaceae

Examples of minor fruits

Common name	Botanical name	Family
Ambarella	<i>Spondias cyatherea</i>	Anacardiaceae
Apricot	<i>Prunus armeniaca</i>	Rosaceae
Breadfruit	<i>Artocarpus altilis</i>	Moraceae
Bullock's Heart	<i>Annona reticulata</i>	Annonaceae
Capulin cherry	<i>Prunus serotina</i>	Rosaceae
Carambola	<i>Averrhoa carambola</i>	Oxalidaceae
Citron	<i>Citrus medica</i>	Rutaceae
Custard apple	<i>Annona squamosa</i>	Annonaceae
Egg fruit	<i>Pouteria campechiana</i>	Sapotaceae
Elderberry	<i>Sambucus nigra</i>	Caprifoliaceae
Gooseberry	<i>Ribes grossularia</i>	Saxifragaceae

.../cont

Minor fruits (cont.)

Gooseberry (Chinese)	<i>Actinidia chinensis</i>	Actinidiaceae
Gooseberry (Otaheite)	<i>Phyllanthus acidus</i>	Euphorbiaceae
Guava (Strawberry)	<i>Psidium cattleianum</i>	Myrtaceae
Java apple	<i>Syzygium aqueum</i>	Myrtaceae
Kei apple	<i>Dovyalis caffra</i>	Flacourtiaceae
Litchi	<i>Litchi chinensis</i>	Sapindaceae
Mangosteen	<i>Garcinia mangostana</i>	Guttiferae
Mountain apple	<i>Syzygium malacense</i>	Myrtaceae
Mountain pawpaw	<i>Carica candamarcensis</i>	Caricaceae
Naranjilla	<i>Solanum quitoense</i>	Solanaceae
Natal plum	<i>Carissa grandiflora</i>	Apocynaceae
Nectarine	<i>Prunus persica</i>	Rosaceae
Olmorogo (Maasai)	<i>Dovyalis macrocalyx</i>	Flacourtiaceae
Papino	<i>Solanum muricatum</i>	Solanaceae
Pitanga cherry	<i>Eugenia uniflora</i>	Myrtaceae
Persimmon	<i>Diospyros kaki</i>	Ebenaceae
Pomerac	<i>Syzygium malacense</i>	Myrtaceae
Prickly pear	<i>Opuntia ficus-indica</i>	Cactaceae
Quince	<i>Cydonia oblonga</i>	Rosaceae
Rambutan	<i>Nephelium lappaceum</i>	Sapindaceae
Raspberry (Shanks)	<i>Rubus shankii</i>	Rosaceae
Raspberry (White-stemmed)	<i>Rubus albescens</i>	Rosaceae

.../cont

Minor fruits (cont.)

Ra-Strawberry	<i>Rubus illecebrosus</i>	Rosaceae
Rose apple	<i>Syzygium jambos</i>	Myrtaceae
Sapodilla	<i>Manilkara achras</i>	Sapotaceae
Sapote	<i>Casimiroa edulis</i>	Rutaceae
Soursop	<i>Annona muricata</i>	Annonaceae
Star apple	<i>Chrysophyllum cainito</i>	Sapotaceae
Star fruit	<i>Averrhoa carambola</i>	Oxalidaceae
Sugar apple	<i>Annona squamosa</i>	Annonaceae
Sweet lime	<i>Citrus aurantifolia</i>	Rutaceae
Tamarind	<i>Tamarindus indica</i>	Leguminosae (C)
Tangelo	<i>Citrus X tangelo</i>	Rutaceae
Tomatillo	<i>Physalis ixocarpa</i>	Solanaceae
Tuna	<i>Opuntia ficus-indica</i>	Cactaceae
Water lemon	<i>Passiflora laurifolia</i>	Passifloraceae
Watery Rose apple	<i>Syzygium aqueum</i>	Myrtaceae
Wax jambu	<i>Syzygium aqueum</i>	Myrtaceae

CLASS 5: VEGETABLE AND SALAD CROPS

The word vegetable is an imprecise term but is used in the following classification to include “root crops”, “green vegetables”, and some “fruits”. When talking about root crops, this group includes any vegetable whose edible part is dug from the ground. “Green vegetable” will include plants in which the above-ground portions are consumed as food, usually fresh, canned, or frozen. The way in which

Minor fruits (cont.)

Ra-Strawberry	<i>Rubus illecebrosus</i>	Rosaceae
Rose apple	<i>Syzygium jambos</i>	Myrtaceae
Sapodilla	<i>Manilkara achras</i>	Sapotaceae
Sapote	<i>Casimiroa edulis</i>	Rutaceae
Soursop	<i>Annona muricata</i>	Annonaceae
Star apple	<i>Chrysophyllum cainito</i>	Sapotaceae
Star fruit	<i>Averrhoa carambola</i>	Oxalidaceae
Sugar apple	<i>Annona squamosa</i>	Annonaceae
Sweet lime	<i>Citrus aurantifolia</i>	Rutaceae
Tamarind	<i>Tamarindus indica</i>	Leguminosae (C)
Tangelo	<i>Citrus X tangelo</i>	Rutaceae
Tomatillo	<i>Physalis ixocarpa</i>	Solanaceae
Tuna	<i>Opuntia ficus-indica</i>	Cactaceae
Water lemon	<i>Passiflora laurifolia</i>	Passifloraceae
Watery Rose apple	<i>Syzygium aqueum</i>	Myrtaceae
Wax jambu	<i>Syzygium aqueum</i>	Myrtaceae

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an eggplant fruit, a tomato, or squash is used may well be described as a vegetable or salad though botanically they are all fruits.

With this background, we can define a vegetable as any plant part that is eaten whole or in part, raw or cooked, generally with an entrée or in a salad. In this case, examples of vegetables include tomato, cabbage, lettuce, and potato. The edible parts of these plants may be a leaf (cabbage), stem (asparagus), flower, or inflorescence (cauliflower and globe artichoke), root (carrot), fruit (tomato), or seed (bean). As foods, green vegetables have little energy value, but they are excellent sources of supplementary dietary substances such as vitamins and minerals. Of all the vegetables produced locally for commercial purposes and for general home consumption, the cabbage family (Brassicaceae) is by far the most important (See Figures 20-36).

Examples of vegetable and salad crops

Common name	Botanical name	Family
Amaranthus	<i>Amaranthus</i> spp.	Amaranthaceae
Artichoke (Globe)	<i>Cynara scolymus</i>	Asteraceae
Artichoke (Jerusalem)	<i>Helianthus tuberosus</i>	Asteraceae
Asparagus	<i>Asparagus officinalis</i>	Asparagaceae
Aubergine	<i>Solanum melongena</i>	Solanaceae
Avocado	<i>Persea americana</i>	Lauraceae
Bean (Broad)	<i>Vicia faba</i>	Leguminosae (P)

.../cont.

Vegetable and salad crops (cont.)

Bean (common)	<i>Phaseolus vulgaris</i>	Leguminosae (P)
Bean (Scarlet runner)	<i>Phaseolus coccineus</i>	Leguminosae (P)
Beetroot	<i>Beta vulgaris</i>	Chenopodiaceae
Brinjal	<i>Solanum melongena</i>	Solanaceae
Broccoli	<i>Brassica oleracea</i> var. <i>botrytis</i>	Brassicaceae
Brussels sprout	<i>Brassica oleracea</i> var. <i>gemmifera</i>	Brassicaceae
Cabbage	<i>Brassica oleracea</i> var. <i>capitata</i>	Brassicaceae
Carrot	<i>Daucus carota</i>	Apiaceae
Cauliflower	<i>Brassica oleracea</i> var. <i>botrytis</i>	Brassicaceae
Celery	<i>Apium graveolens</i> var. <i>dulce</i>	Apiaceae
Chicory	<i>Cichorium intybus</i>	Asteraceae
Chinese cabbage	<i>Brassica chinensis</i>	Brassicaceae
Chive	<i>Allium schoenoprasum</i>	Alliaceae
Chora	<i>Vigna unguiculata</i>	Leguminosae (P)
Choyote	<i>Sechium edule</i>	Cucurbitaceae
Cluster Bean	<i>Cyamopsis tetragonoloba</i>	Leguminosae (P)
Cowpea	<i>Vigna unguiculata</i>	Leguminosae (P)
Cress (Garden)	<i>Lepidium sativum</i>	Brassicaceae
Cress (Water)	<i>Nasturtium officinale</i>	Brassicaceae
Crotalaria	<i>Crotalaria brevidens</i>	Leguminosae (P)

..../cont.

Vegetable and salad crops (cont.)

Cucumber	<i>Cucumis sativus</i>	Cucurbitaceae
Dudhi	<i>Lagenaria siceraria</i>	Cucurbitaceae
Eggplant	<i>Solanum melongena</i>	Solanaceae
Elephant yam	<i>Amorphophallus campanulatus</i>	Araceae
Endive	<i>Cichorium endivia</i>	Asteraceae
Fennel (Florentine)	<i>Foeniculum dulce</i>	Apiaceae
Galka	<i>Luffa cylindrica</i>	Cucurbitaceae
Gherkin	<i>Cucumis sativus</i>	Cucurbitaceae
Globe Artichoke	<i>Cynara scolymus</i>	Asteraceae
Guar	<i>Cyamopsis tetragonoloba</i>	Legumiosae
Gourd	<i>Lagenaria siceraria</i>	Cucurbitaceae
Horse radish tree	<i>Moringa oleifera</i>	Moringaceae
Jerusalem artichoke	<i>Helianthus tuberosus</i>	Asteraceae
Kale	<i>Brassica oleracea</i> var. <i>acephala</i>	Brassicaceae
Karela	<i>Momordica charantia</i>	Cucurbitaceae
Kohlrabi	<i>Brassica oleracea</i> var. <i>gongyloides</i>	Brassicaceae
Leek	<i>Allium ampeloprasum</i> var. <i>porrum</i>	Alliaceae
Lettuce	<i>Lactuca sativa</i>	Asteraceae
Marrow	<i>Cucurbita pepo</i>	Cucurbitaceae
Mushroom	<i>Psalliota campestris</i>	Basidiomycetes
Night shade	<i>Solanum nigrum</i>	Solanaceae

..../cont.

Vegetable and salad crops (cont.)

Okra	<i>Abelmoschus esculentus</i>	Malvaceae
Onion	<i>Allium cepa</i> var. <i>cepa</i>	Alliaceae
Parsely	<i>Petroselinum crispum</i>	Apiaceae
Parsnip	<i>Pastinaca sativa</i>	Apiaceae
Pea	<i>Pisum sativum</i>	Leguminosae (P)
Pea (Pigeon)	<i>Cajanus cajan</i>	Leguminosae (P)
Pumpkin	<i>Cucurbita maxima</i>	Cucurbitaceae
Purslane	<i>Portulaca oleracea</i>	Portulacaceae
Radish	<i>Raphanus sativus</i>	Brassicaceae
Radish (Moolee)	<i>Raphanus sativus</i> var. <i>hortensis</i>	Brassicaceae
Rape	<i>Brassica napus</i>	Brassicaceae
Rhubarb	<i>Rheum rhaponticum</i>	Polygonaceae
Scarlet runner bean	<i>Phaseolus coccineus</i>	Leguminosae (P)
Saragwo	<i>Moringa oleifera</i>	Moringaceae
Savoy	<i>Brassica oleracea</i> var. <i>capitata</i>	Brassicaceae
Snake gourd	<i>Trichosanthes cucumerina</i>	Cucurbitaceae
Spinach	<i>Spinacia oleracea</i>	Chenopodiaceae
Spinach (Amaranthus)	<i>Amaranthus</i> spp.	Amaranthaceae
Spinach beet	<i>Beta vulgaris</i>	Chenopodiaceae
Spinach (New Zealand)	<i>Tetragonia expansa</i>	Aizoaceae
Suran	<i>Amorphophallus campanulatus</i>	Araceae

..../cont.

Vegetable and salad crops (cont.)

Sweet corn	<i>Zea mays</i> var. <i>saccharata</i>	Poaceae
Sweet pepper	<i>Capsicum annuum</i>	Solanaceae
Tindora	<i>Coccinia grandis</i>	Cucurbitaceae
Tomato	<i>Solanum lycopersicum</i>	Solanaceae
Tomato (Cherry)	<i>Solanum lycopersicum</i> var. <i>ceraciforme</i>	Solanaceae
Tomato (Tree)	<i>Solanum betaceum</i>	Solanaceae
Turia	<i>Luffa acutangula</i>	Cucurbitaceae
Turnip	<i>Brassica rapa</i>	Brassicaceae
Val	<i>Lablab purpureus</i>	Leguminosae (P)
Valor	<i>Lablab purpureus</i> var. <i>benghalensis</i>	Leguminosae (P)
Watercress	<i>Nasturtium officinale</i>	Brassicaceae

CLASS 6: LEGUMES (GRAIN LEGUMES OR PULSES)

A legume or pulse is any member of the large group of plants of the bean family, *Leguminosae*, which is characterised by true pods enclosing seeds. Leguminous or pulse crops are second only to cereals as a source of both human and animal nutriment. They have 2-3 times the protein content of most cereals and an even higher proportion than the starchy root crops. The protein content in legumes is, however, not as well-proportioned as animal (fish or meat) protein in the amino acids needed in the human diet; often being deficient in some and rich in others. Legumes supply lysine and methionine which are essential amino acids usually lacking in cereals such as

Vegetable and salad crops (cont.)

Sweet corn	<i>Zea mays</i> var. <i>saccharata</i>	Poaceae
Sweet pepper	<i>Capsicum annuum</i>	Solanaceae
Tindora	<i>Coccinia grandis</i>	Cucurbitaceae
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maize. A disease such as Kwashiorkor, which is due to protein deficiency, can be prevented by simply including enough legumes in the diet. It should be noted that all leguminous crops belong to the sub-family *Papilionoideae* (P) (See Figures 4–7 and Fig. 19).

Examples of major legumes

Common name	Botanical name
Bean (Broad)	<i>Vicia faba</i>
Bean (Common, haricot, kidney)	<i>Phaseolus vulgaris</i>
Cowpea	<i>Vigna unguiculata</i>
Groundnut	<i>Arachis hypogaea</i>
Pea	<i>Pisum sativum</i>
Peanut	<i>Arachis hypogaea</i>
Pigeon pea	<i>Cajanus cajan</i>
Scarlet runner	<i>Phaseolus coccineus</i>

Examples of minor legumes

Common name	Botanical name
Bambara groundnut	<i>Vigna subterranea</i>
Bean (Butter)	<i>Phaseolus lunatus</i>
Bean (Hyacinth, lablab)	<i>Lablab purpureus</i>
Bean (Lima)	<i>Phaseolus lunatus</i>
Bean (Sword)	<i>Canavalia ensiformis</i>

..../cont.

Minor crops (cont.)

Bean (Tepary)	<i>Phaseolus acutifolius</i>
Bean (Velvet)	<i>Mucuna nivea</i>
Chick pea	<i>Cicer arietinum</i>
Gram	<i>Cicer arietinum</i>
Gram (Black)	<i>Vigna mungo</i>
Gram (Green)	<i>Vigna radiata</i>
Soya bean	<i>Glycine max</i>

(See more about legumes under Class 17, Forage and Fodder Plants)

CLASS 7: NUTS

Nuts are types of simple indehiscent fruits, with hard and woody pericarps, usually encased in an involucre of husks. They are eaten in several ways and practically all of them yield some kind of vegetable oil. Although most nuts are aerial, groundnut is an exception since the fertilised flower (peg) penetrates the soil and the fruit eventually develops underground (See Figure 14).

Minor crops (cont.)

Bean (Tepary)	<i>Phaseolus acutifolius</i>
Bean (Velvet)	<i>Mucuna nivea</i>
Chick pea	<i>Cicer arietinum</i>
Gram	<i>Cicer arietinum</i>
Gram (Black)	<i>Vigna mungo</i>
Gram (Green)	<i>Vigna radiata</i>
Soya bean	<i>Glycine max</i>

(See more about legumes under Class 17, Forage and Fodder Plants)

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Examples of major nuts

Common name	Botanical name	Family
Areca nut	<i>Areca catechu</i>	Arecaceae
Betel nut	<i>Areca catechu</i>	Arecaceae
Cashewnut	<i>Anacardium occidentale</i>	Anacardiaceae
Coconut	<i>Cocos nucifera</i>	Arecaceae
Groundnut	<i>Arachis hypogaea</i>	Leguminosae (P)
Macadamia nut	<i>Macadamia ternifolia</i>	Proteaceae
Oyster nut	<i>Telfairia pedata</i>	Cucurbitaceae
Peanut	<i>Arachis hypogaea</i>	Leguminosae (P)
Zanzibar oil vine	<i>Telfairia pedata</i>	Cucurbitaceae

Examples of minor nuts

Common name	Botanical name	Family
Bambara groundnut	<i>Vigna subterranea</i>	Leguminosae (P)
Brazil nut	<i>Bertholletia excelsa</i>	Myrtaceae
Chestnut	<i>Castanea sativa</i>	Fagaceae
Indian almond	<i>Terminalia catappa</i>	Combretaceae
Pecan nut	<i>Carya illinoensis</i>	Juglandaceae
Pistachio nut	<i>Pistacia vera</i>	Anacardiaceae
Walnut	<i>Juglans regia</i>	Juglandaceae
Yeheb nut	<i>Cordeauxia edulis</i>	Leguminosae (C)

CLASS 8: OIL AND WAX CROPS

Plant fats are glycerides or esters of glycerol with fatty acids. At normal temperatures (about 22°C) they are either liquid (then called oils) or solid (called solid fats). The oil or fat character of the glycerides depends upon the nature of the fatty acids present in each case. The commonest fatty acids are palmitic acid and stearic acid both of which are saturated and give solid consistency to the fats in which they are combined. Another common fatty acid is oleic acid which is unsaturated and constitutes the principal component of vegetable oils.

Oils can be transformed chemically into fats by the addition of hydrogen to the molecules of the unsaturated acids. This process, called hydrogenation or fat hardening, changes vegetable oils, such as that of groundnut, into margarine. Soaps are the alkaline salts of fatty acids whose manufacture is based on the cleavage of fats by strong alkalis in a process called saponification. "Drying oils" are those oils which are more unsaturated than oleic acid, for example, linoleic and linolenic acids. These oils are used in the formulation of paints since they harden quickly. The majority of useful plant oils belong to the non-drying oils group including such examples as coconut, oil palm, castor bean, cotton, groundnut, sesame, soya and maize. Waxes are fatty acid esters of monohydroxy alcohols. They are found as protective coverings on the surfaces of leaves and stems where they help in checking transpiration (See Figures 15 and 16).

Examples of oil and wax crops

Common name	Botanical name	Family
Acietuno	<i>Quassia simarouba</i>	Simaroubaceae
African oil palm	<i>Elaeis guineensis</i>	Arecaceae
Candlenut	<i>Aleurites moluccana</i>	Euphorbiaceae
Castor	<i>Ricinus communis</i>	Euphorbiaceae
Cedar oil	<i>Juniperus procera</i>	Cupressaceae
Clove oil	<i>Syzygium aromaticum</i>	Myrtaceae
Coconut	<i>Cocos nucifera</i>	Arecaceae
Corn	<i>Zea mays</i>	Poaceae
Cotton (Egyptian)	<i>Gossypium barbadense</i>	Malvaceae
*Cotton (Upland)	<i>Gossypium hirsutum</i>	Malvaceae
Cramble oil	<i>Crambe abyssinica</i>	Brassicaceae
Geranium oil	<i>Pelargonium graveolens</i>	Geraniaceae
Groundnut	<i>Arachis hypogaea</i>	Leguminosae (P)
Leptospermum	<i>Leptospermum petersonii</i>	Myrtaceae
Linseed	<i>Phormium tenax</i>	Linaceae
Maize	<i>Zea mays</i>	Poaceae
Nim oil	<i>Azadirachta indica</i>	Meliaceae
Nindi	<i>Aeolanthus gamwelliae</i>	Lamiaceae
Oil palm	<i>Elaeis guineensis</i>	Arecaceae
Palmarosa	<i>Cymbopogon martini</i>	Poaceae
Peanut	<i>Arachis hypogaea</i>	Leguminosae (P)
Rape oil	<i>Brassica napus</i>	Brassicaceae
Rosemary	<i>Rosmarinus officinalis</i>	Lamiaceae

..../cont.

Oil and wax crops (cont.)

Safflower	<i>Carthamus tinctorius</i>	Asteraceae
Sesame	<i>Sesamum orientale</i>	Pedaliaceae
Simsim	<i>Sesamum orientale</i>	Pedaliaceae
Soya or soyabean	<i>Glycine max</i>	Leguminosae (P)
Sunflower	<i>Helianthus annuus</i>	Asteraceae
Vetiver oil	<i>Vetiveria zizanioides</i>	Poaceae
Wax palm	<i>Copernicia cerifera</i>	Areaceae

***The most widely grown species in East Africa**

CLASS 9: SPICE CROPS

Spices are parts of plants that often have a strong smell and penetrating or piquant taste. They are added to certain foods and dishes in order to improve or modify the flavour. Spices have long been in use since the earliest times and attained special importance during the Middle Ages and the Renaissance period. The word “spice” includes crops like clove which would not fit very well in the class of “Pot herbs” since clove is from a shrub or a tree. Spices are usually used in the form of a powder and apart from their strong pleasant smell or taste, some have attractive colours that make food to appear appetising.

Oil and wax crops (cont.)

Safflower	<i>Carthamus tinctorius</i>	Asteraceae
Sesame	<i>Sesamum orientale</i>	Pedaliaceae
Simsim	<i>Sesamum orientale</i>	Pedaliaceae
Soya or soyabean	<i>Glycine max</i>	Leguminosae (P)
Sunflower	<i>Helianthus annuus</i>	Asteraceae
Vetiver oil	<i>Vetiveria zizanioides</i>	Poaceae
Wax palm	<i>Copernicia cerifera</i>	Areaceae

***The most widely grown species in East Africa**

CLASS 9: SPICE CROPS

Spices are parts of plants that often have a strong smell and penetrating or piquant taste. They are added to certain foods and dishes in order to improve or modify the flavour. Spices have long been in use since the earliest times and attained special importance during the Middle Ages and the Renaissance period. The word “spice” includes crops like clove which would not fit very well in the class of “Pot herbs” since clove is from a shrub or a tree. Spices are usually used in the form of a powder and apart from their strong pleasant smell or taste, some have attractive colours that make food to appear appetising.

Examples of spice crops

Common name	Botanical name	Family
Bay laurel	<i>Laurus nobilis</i>	Lauraceae
Bay leaf	<i>Laurus nobilis</i>	Lauraceae
Bidhari	<i>Curcuma longa</i>	Zingiberaceae
Chillies	<i>Capsicum frutescens</i>	Solanaceae
Cinnamon	<i>Cinnamomum zeylanicum</i>	Lauraceae
Clove	<i>Syzygium aromaticum</i>	Myrtaceae
Coriander	<i>Coriandrum sativum</i>	Apiaceae
Ginger	<i>Zingiber officinale</i>	Zingiberaceae
Lemongrass	<i>Cymbopogon citratus</i>	Poaceae
Pepper	<i>Piper nigrum</i>	Piperaceae
Red pepper	<i>Capsicum frutescens</i>	Solanaceae
Sweet bay	<i>Laurus nobilis</i>	Lauraceae
Turmeric	<i>Curcuma longa</i>	Zingiberaceae
Vanilla	<i>Vanilla planifolia</i>	Orchidaceae
Vinzari	<i>Curcuma longa</i>	Zingiberaceae

Note: Although the mustard producing species, *Brassica nigra* and *Sinapis alba* had been grown experimentally and then discarded, some farmers may begin to grow them again because of the high demand for mustard.

CLASS 10: POT HERBS

These are normally herbs whose leaves and stems are boiled and eaten or used to flavour food. For flavouring, East Africans normally fry onions in oil before adding the main dish (meat, fish, or vegetables) being cooked. In general, pot herbs have a strong smell and when added to certain foods they give a better taste or make food more appetising. Readers should, however, note that the term “pot herb” does not have universal meaning and, therefore, opinion also varies as to what should be included in this class. In East Africa, pot herbs are predominantly obtained from the families *Apiaceae* (*Umbelliferae*), *Lamiaceae* (*Labiatae*), and *Amaryllidaceae*.

Examples of pot herbs

Common name	Botanical name	Family
Angelica	<i>Angelica archangelica</i>	Apiaceae
Balm	<i>Melissa officinalis</i>	Lamiaceae
Basil	<i>Ocimum basilicum</i>	Lamiaceae
Borage	<i>Borago officinalis</i>	Boraginaceae
Celeriac	<i>Apium graveolens</i> var. <i>rapaceum</i>	Apiaceae
Chervil	<i>Anthriscus cerefolium</i>	Apiaceae
Chillies	<i>Capsicum frutescens</i>	Solanaceae
Curry leaves	<i>Murraya koenigii</i>	Rutaceae
Dhania	<i>Coriandrum sativum</i>	Apiaceae
Dill	<i>Anethum graveolens</i>	Apiaceae
Fennel	<i>Foeniculum vulgare</i>	Apiaceae

.../cont.

Pot herbs (cont.)

Fenugreek	<i>Trigonella foenum-graecum</i>	Leguminosae (P)
Garden mint	<i>Mentha spicata</i>	Lamiaceae
Garlic	<i>Allium sativum</i>	Alliaceae
Horehound	<i>Marrubium vulgare</i>	Lamiaceae
Horseradish	<i>Armoracia rusticana</i>	Brassicaceae
Liquorice	<i>Glycyrrhiza glabra</i>	Leguminosae (P)
Marjoram	<i>Origanum majorana</i>	Lamiaceae
Methi	<i>Trigonella foenum-graecum</i>	Leguminosae (P)
Mint (Pennyroyal)	<i>Mentha pulegium</i>	Lamiaceae
Mint (Round-leaved)	<i>Mentha rotundifolia</i>	Lamiaceae
Mint (Spear)	<i>Mentha spicata</i>	Lamiaceae
Onion	<i>Allium cepa</i>	Alliaceae
Pepper (Red)	<i>Capsicum frutescens</i>	Solanaceae
Rue	<i>Ruta graveolens</i>	Rutaceae
Sage	<i>Salvia officinalis</i>	Lamiaceae
Savory	<i>Satureja hortensis</i>	Lamiaceae
Shallot	<i>Allium cepa</i> var. <i>aggregatum</i>	Alliaceae
Spearmint	<i>Mentha spicata</i>	Lamiaceae
Thyme (Common)	<i>Thymus vulgaris</i>	Lamiaceae
Thyme (Creeping)	<i>Thymus serpyllum</i>	Lamiaceae

CLASS 11: BEVERAGE CROPS

These include crops grown primarily for the purpose of making drinks (See Figures 10, 11, and 39). Apart from fruit juice, other types of drink can be made from parts of plants like coffee (seedbean), tea (leaf), or cacao (seedbean). Such drinks are prepared by steeping specially prepared materials in water and during such process other substances, such as caffeine, diffuse into the beverage. Beverages may be grouped into a non-alcoholic group which includes coffee, tea, and chocolate and an alcoholic group that includes beer, which is derived from the alcoholic fermentation of malted cereals.

Examples of beverage crops

Common name	Botanical name	Family
Barley	<i>Hordeum vulgare</i>	Poaceae
Bulrush Millet	<i>Pennisetum typhoideum</i>	Poaceae
Chicory	<i>Cichorium intybus</i>	Asteraceae
Cocoa	<i>Theobroma cacao</i>	Sterculiaceae
Coffee (Arabica)	<i>Coffea arabica</i>	Rubiaceae
Coffee (Robusta)	<i>Coffea canephora</i>	Rubiaceae
Grapes	<i>Vitis vinifera</i>	Vitaceae
*Sugar cane	<i>Saccharum officinarum</i>	Poaceae
Tamarind	<i>Tamarindus indica</i>	Leguminosae (C)
Tea	<i>Camellia sinensis</i>	Theaceae
Wine grapes	<i>Vitis vinifera</i>	Vitaceae

*Mainly used as a condiment (adding taste or for sweetening)

CLASS 12: STIMULANT CROPS

Coffee and tea are the most widely grown food stimulants in East Africa. They both contain caffeine, a feeble and basic alkaloid of uric acid group. Hemp, miraa and tobacco, though grouped under stimulants, are actually narcotics and are not fully accepted for general use for one reason or another. Despite being illegal in certain parts of East Africa, these plants are still grown and used in various ways by different communities (See Figures 11 and 24).

Examples of stimulant crops

Common name	Botanical name	Family
Cocoa	<i>Theobroma cacao</i>	Sterculiaceae
Coffee (Arabica)	<i>Coffea arabica</i>	Rubiaceae
Coffee (Robusta)	<i>Coffea canephora</i>	Rubiaceae
Cola nut	<i>Cola acuminata</i>	Sterculiaceae
Hemp	<i>Cannabis sativa</i>	Cannabaceae
Khat	<i>Catha edulis</i>	Celastraceae
Miraa	<i>Catha edulis</i>	Celastraceae
Tea	<i>Camellia sinensis</i>	Theaceae
Tobacco	<i>Nicotiana tabacum</i>	Solanaceae

CLASS 13: FIBRE CROPS

These crops include those plants that supply fibre for use in the manufacture of textiles, carpets, mats, brooms, or stuffing materials for mattresses, cushions, and other products. Fibres may be subdivided into three subgroups according to the part of the plant yielding the fibre. The first subgroup called “Seed Fibres” consists of cellulose

fibres. The outer tegument of some plant seeds is covered with fibres which aid their dispersal by wind. Seed fibres are obtained from cotton, kapok, bulrush, or typha (*Typha* spp.). “Leaf Fibres” is the second subgroup of fibres and consists mainly of monocotyledonous plants. Such plants have broad leaves in which the fibres envelope the veins and stiff sheaths. Included in this subgroup are sisal, ensete, and sansevieria. The rest of the fibres fall into the third category called the “Bast Fibres”. The term “bast” is used to signify the stem phloem, though strictly speaking the pericycle is also included. This group of fibres is obtained from many plants, the most common examples being flax, hemp, and jute (See Figures 12 and 13).

The foregoing classification can be summarised as follows:

1. **Seed or surface fibres** which are hair-like outgrowths of particular seeds or inner surface of pods. Examples are cotton, kapok, and bulrush.
2. **Leaf or hard or structural fibres** which are associated with the vascular bundles of the leaves of certain monocotyledonous plants. Examples are sisal, ensete, and sansevieria.
3. **Bast or soft fibres** which occur in dicotyledonous stems outside the wood, in the phloem, cortex, or pericycle. Examples are flax, hemp, and jute.

Examples of major fibre crops

Common name	Botanical name	Family
Cotton (Egyptian)	<i>Gossypium barbadense</i>	Malvaceae
Cotton (Sea island)	<i>Gossypium barbadense</i>	Malvaceae
Cotton (Upland)	<i>Gossypium hirsutum</i>	Malvaceae
Kapok	<i>Ceiba pentandra</i>	Bombacaceae
New Zealand flax	<i>Phormium tenax</i>	Phormiaceae
Sisal	<i>Agave sisalana</i>	Agavaceae

Minor Fibre Crops

Most of the minor fibres have only been cultivated as experimental crops.

Examples of minor fibre crops

Common name	Botanical name	Family
Abutilon fibre	<i>Abutilon longicuspe</i>	Malvaceae
Coir fibre	<i>Cocos nucifera</i>	Arecaceae
Doum palm	<i>Hyphaene coriacea</i>	Arecaceae
Ensete	<i>Ensete ventricosum</i>	Musaceae
Flax	<i>Phormium tenax</i>	Phormiaceae
Hemp fibre	<i>Cannabis sativa</i>	Cannabiaceae
Hibiscus fibre	<i>Hibiscus</i> spp.	Malvaceae
Jute (Tussa)	<i>Corchorus olitorius</i>	Tiliaceae
Jute (White)	<i>Corchorus capsularis</i>	Tiliaceae

..../cont.

Minor fiber crops (**cont.**)

Kenaf	<i>Hibiscus cannabinus</i>	Malvaceae
Mallow fibre	<i>Malva verticillata</i>	Malvaceae
Mauritius hemp	<i>Furcraea gigantea</i>	Agavaceae
Pavonia fibre	<i>Pavonia schimperiana</i>	Malvaceae
Pavonia fibre	<i>Pavonia urens</i>	Malvaceae
Sann hemp	<i>Crotalaria juncea</i>	Leguminosae (P)
Sansevieria fibre	<i>Sansevieria</i> spp.	Dracaenaceae
Sida fibre	<i>Sida rhombifolia</i>	Malvaceae

CLASS 14: DYE AND TANNIN PLANTS

The production of natural plant dyes was once a major industry and their importance on the list of British colonial administration products was second only to spices. The last century has, however, witnessed a major dwindling in the use of natural dyes due to the development of synthetic substitutes which are cheaper to make and are more uniform. The natural dyes occur in various parts of the plant such as the wood, leaves, seeds and so on. In some species, the dye stuff is extracted ready for use, while in others the plant must undergo special treatment before dyeing properties develop. Although many vegetable colouring materials have lost their economic importance, a few are still in use. For example, the haematoxylin used in staining microscopic specimens is from the legume *Haematoxylon campechianum* and the red, tasteless, and non-poisonous dye called annatto from *Bixa orellana* is used in its natural state for food colouring.

Minor fiber crops (**cont.**)

Kenaf	<i>Hibiscus cannabinus</i>	Malvaceae
Mallow fibre	<i>Malva verticillata</i>	Malvaceae
Mauritius hemp	<i>Furcraea gigantea</i>	Agavaceae
Pavonia fibre	<i>Pavonia schimperiana</i>	Malvaceae
Pavonia fibre	<i>Pavonia urens</i>	Malvaceae
Sann hemp	<i>Crotalaria juncea</i>	Leguminosae (P)
Sansevieria fibre	<i>Sansevieria</i> spp.	Dracaenaceae
Sida fibre	<i>Sida rhombifolia</i>	Malvaceae

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Tannin is the material containing tannic acid in which raw hide is soaked to change it into leather. Natural tannins are substances belonging to two groups of polyphenols (gallotannins and catechin-derived tannins) which have the property of tanning animal skins. This means they combine chemically with the protein of the skin and transform it into leather, the skin thus becomes both soft and durable. Although tannins are widespread throughout the plant kingdom, only those species with a high percentage of the product are commercially exploited. Of all tannin producing species tested for the East African climate, black wattle is by far the most successful one. In general, vegetable tannins may come from the bark, wood, leaves, fruits, or roots. One type of tannin is called catechol tannins which is obtained from the bark of wood; while the second type is pyrogallol tannin which is obtained from leaves and fruits (See Figure 17).

It will be noted that a number of the listed dye and tannin plants are either for experimental purposes or are used in fairly small quantities. All the three Leguminosae subfamilies Caesalpinioideae (C), Mimosoideae (M) and Papilionoideae (P) are mentioned.

Examples of dye plants

Common name	Botanical name	Family
Annatto	<i>Bixa orellana</i>	Bixaceae
Henna	<i>Lawsonia inermis</i>	Lythraceae
Indigo (True)	<i>Indigofera tinctoria</i>	Leguminosae (P)
Indigo	<i>Indigofera anil</i>	Leguminosae (P)

..../cont.

Dye plants (**cont.**)

Indigo	<i>Indigofera arrecta</i>	Leguminosae (P)
Logwood	<i>Haematoxylon campechianum</i>	Leguminosae (C)
Pomegranate	<i>Punica granatum</i>	Punicaceae
Rumex	<i>Rumex abyssinicus</i>	Polygonaceae
Sappanwood	<i>Caesalpinia sappan</i>	Leguminosae (C)
Turmeric	<i>Curcuma longa</i>	Zingiberaceae

Examples of tannin plants

Common name	Botanical name	Family
Agarobilli	<i>Caesalpinia brevifolia</i>	Leguminosae (C)
Black wattle	<i>Acacia mearnsii</i>	Leguminosae (M)
Mangroves	Several species	Rhizophoraceae
Mkoko	<i>Rhizophora mucronata</i>	Rhizophoraceae
Mkanda	<i>Ceriops tagal</i>	Rhizophoraceae
Msinzi	<i>Bruguiera gymnorrhiza</i>	Rhizophoraceae
Purging cassia	<i>Cassia fistula</i>	Leguminosae (C)
Tanner's dock	<i>Rumex hymenosepalus</i>	Polygonaceae
Tara bean	<i>Caesalpinia spinosa</i>	Leguminosae (C)
Wattle (Black)	<i>Acacia mearnsii</i>	Leguminosae (M)

CLASS 15: RUBBER, GUM AND RESIN PLANTS

The main source of commercial rubber is the caoutchouc contained in the latex found in para rubber. Latex is an emulsion of small globules produced in specialised plant cells or vessels and is of variable composition. It usually contains hydrocarbons such as caoutchouc and or gutta percha and occasionally may also have oils, resins, gums, alkaloids, or starch. Gums and resins are organic compounds widely distributed in plants. Whereas gums are the breakdown products of tissues, especially cellulose, resins are oxidation products of essential oils.

Rubber Plants

Most of the rubber-producing species were on experimental trial during the British colonial administration in East Africa, particularly in Uganda.

Examples of rubber plants

Common name	Botanical name	Family
Castilloa rubber	<i>Castilla elastica</i>	Moraceae
Caera rubber	<i>Manihot glaziovii</i>	Euphorbiaceae
Fig rubber	<i>Ficus natalensis</i>	Moraceae
Funtumia rubber	<i>Funtumia elastica</i>	Apocynaceae
Indian rubber	<i>Ficus elastica</i>	Moraceae
Lagos rubber	<i>Funtumia elastica</i>	Apocynaceae
Landolphia rubber	<i>Landolphia</i> spp.	Apocynaceae
Panama rubber	<i>Castilla elastica</i>	Moraceae
Para rubber	<i>Hevea brasiliensis</i>	Euphorbiaceae

Examples of gum and resin plants

Common name	Botanical name	Family
Gum plants		
Commiphora Gum	<i>Commiphora</i> spp.	Burseraceae
Gum Arabica	<i>Acacia senegal</i>	Leguminosae (M)
Resin plant		
Copal (Zanzibar)	<i>Hymenaea verrucosa</i>	Leguminosae (C)

CLASS 16: INSECTICIDES AND FISH POISON PLANTS

When studying poisonous plants, one will find that species with toxic qualities used as fish poisons may also be useful as insecticides and vice versa. It is also noted that the vapour from various plants is used as an insecticide, while the latex from plant parts is frequently used as fish poison. Pyrethrines extracted from the flowers of pyrethrum plants have proved effective in controlling pests and present little or no environmental hazards since they are easily biodegraded. The following species are either used as insecticides or as fish poisons (the former indicated by Figure 18). Plant names marked with asterisk (*) are used as fish poison.

Examples of gum and resin plants

Common name	Botanical name	Family
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Commiphora Gum	<i>Commiphora</i> spp.	Burseraceae
Gum Arabica	<i>Acacia senegal</i>	Leguminosae (M)
Resin plant		
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Examples of insecticides and fish poison plants

Common name	Botanical name	Family
*Finger euphorbia	<i>Euphorbia tirucalli</i>	Euphorbiaceae
Mosquito bush	<i>Ocimum basilicum</i>	Lamiaceae
Mosquito bush	<i>Ocimum gratissimum</i>	Lamiaceae
*Mtomondo	<i>Barrinngtonia racemosa</i>	Barrinngtoniaceae
*Mvunja kongwa	<i>Synadenium glaucescens</i>	Euphorbiaceae
Pyrethrum	<i>Chrysanthemum cinerariifolium</i>	Asteraceae
*Tuba root	<i>Derris elliptica</i>	Leguminosae (P)
*Utupa	<i>Adenium obesum</i>	Apocynaceae
*Utupa wa miti	<i>Mundulea sericea</i>	Leguminosae (P)
*Utupa wa mrima	<i>Tephrosia vogelii</i>	Leguminosae (P)
*Utupa wa mwitu	<i>Sophora tomentosa</i>	Leguminosae (P)
White Tephrosia	<i>Tephrosia candida</i>	Leguminosae (P)

CLASS 17: FORAGE AND FODDER PLANTS

The word “forage” is used here to refer to all those plants that are eaten by livestock as food. While forage plants are eaten in their natural habitats, fodder plants are strictly those harvested and taken to the livestock as hay, straw, or soiling crops. Pasture is natural grassland and includes all the growing herbage eaten by livestock. Another word frequently used in this connection is “ley”, which is planted pasture or grassland harvested in rotation after every two or three years. Forb refers to a herbaceous plant in the pasture which is not a grass. The three words forage,

Examples of insecticides and fish poison plants

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*Tuba root	<i>Derris elliptica</i>	Leguminosae (P)
*Utupa	<i>Adenium obesum</i>	Apocynaceae
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fodder, and pasture are however, used interchangeably these days. The importance of a good pasture is to achieve the best animal production.

Although there are many forage plants in East Africa, only a few important examples will be mentioned. We should also be acquainted with the terms “grazing” as opposed to “browsing”. An animal feeding on grass is a grazer and grazes; while one eating forbs or shrubs is a browser and browses. With this knowledge, therefore, we shall divide the forage plants into three categories as follows: grasses, legumes, and other browse plants.

Grasses

The grasses belong to the family *Poaceae* or *Gramineae* and form the most important part of pastures. Although many species may be coarse and unpalatable, a good number of the grasses are used by animals at one stage or another, especially when still young. Grasses form about 90 per cent of the total herbage. The following are the common examples of grasses in East Africa and include both the indigenous and introduced types.

Examples of forage and fodder plants

Common name	Botanical name
African couch grass	<i>Digitaria scalarum</i>
African foxtail grass	<i>Cenchrus ciliaris</i>
Bermuda grass	<i>Cynodon dactylon</i>
Buffalo bean grass	<i>Rottboelia exaltata</i>
Cocksfoot (Orchard) grass	<i>Dactylis glomerata</i>
Coloured Guinea grass	<i>Panicum coloratum</i>
Couch grass	<i>Digitaria scalarum</i>
Creeping signal grass	<i>Brachiaria decumbens</i>
Elephant (Napier) grass	<i>Pennisetum purpureum</i>
Giant setaria	<i>Setaria splendida</i>
Grey hoodgrass	<i>Hyparrhenia collina</i>
Guatemala grass	<i>Tripsacum laxum</i>
Guinea grass	<i>Panicum maximum</i>
Kikuyu grass	<i>Pennisetum clandestinum</i>
Masai grass	<i>Pennisetum stramineum</i>
Masai lovegrass	<i>Eragrostis superba</i>
Millet (Foxtail or Italian)	<i>Setaria italica</i>
Molasses grass	<i>Melinis minutiflora</i>
Nandi setaria	<i>Setaria sphacelata</i>
Napier (Elephant) grass	<i>Pennisetum purpureum</i>
Orchard (Cocksfoot) grass	<i>Dactylis glomerata</i>
Palisade grass	<i>Brachiaria brizantha</i>
Red oat grass	<i>Themeda triandra</i>

..../cont.

Forage and fodder plants (cont)

Red top grass	<i>Rhynchelytrum repens</i>
Rhodes grass	<i>Chloris gayana</i>
Rye grass	<i>Lolium perenne</i>
Sand lovegrass	<i>Eragrostis ciliaris</i>
Signal grass (Common)	<i>Brachiaria brizantha</i>
Signal grass (Creeping)	<i>Brachiaria decumbens</i>
Soda dropseed grass	<i>Sporobolus marginatus</i>
Star grass (Common)	<i>Cynodon dactylon</i>
Star grass (Naivasha)	<i>Cynodon plectostachyus</i>
Sudan grass (Wild)	<i>Sorghum verticilliflorum</i>
Sweet pitted grass	<i>Bothriochloa insculpta</i>

Legumes

They are all members of the family *Leguminosae* subfamily *Papilionoideae*. Although they seldom exceed 10 per cent of the total herbage, they are generally much superior in quality to the grasses. Legumes are rich in protein and are valuable to livestock, though some are unpalatable or even poisonous. Legumes fix atmospheric nitrogen into the soil using nitrogen fixing bacteria. Such bacteria are mainly Rhizobia from the genus *Rhizobium* that live in symbiotic association with the legumes in the root nodules. Through the process of nitrogen fixing the legumes not only improve soil fertility, but also the grass growing on it. Included among the legumes grown as pasture crops are several introduced species. The following are the common legumes, both indigenous and introduced, found in East

Africa. All these legumes belong to the subfamily Papilionoideae (P) (See Figures 4-7 and 19).

Examples of legumes

Common name	Botanical name
Alfafa	<i>Medicago sativa</i>
_____	<i>Alysicarpus glumaceus</i>
_____	<i>Astragalus atropilosulus</i>
_____	<i>Centrosema pubescens</i>
Clover (Burr)	<i>Medicago laciniata</i>
Clover (Kenya White)	<i>Trifolium semipilorum</i>
Clover (White)	<i>Trifolium repens</i>
Clover (Others)	<i>Trifolium rueppellianum</i>
_____	<i>Trifolium steudneri</i>
_____	<i>Trifolium subterraneum</i>
Cowpea	<i>Vigna unguiculata</i>
_____	<i>Crotalaria brevidens</i> var. <i>intermedia</i>
_____	<i>Desmodium intortum</i>
_____	<i>Desmodium uncinatum</i>
_____	<i>Glycine wightii</i>
Hyacinth bean	<i>Lablab purpureus</i>
_____	<i>Indigofera schimperii</i>
_____	<i>Indigofera swaziensis</i>
_____	<i>Indigofera trita</i>
_____	<i>Leucaena leucocephala</i>

..../cont.

Legumes (cont.)

Lucerne	<i>Medicago sativa</i>
_____	<i>Rhynchosia minima</i>
Sirato	<i>Phaseolus atropurpureus</i>
Soya bean	<i>Glycine max</i>
_____	<i>Stylosanthes erecta</i>
_____	<i>Stylosanthes fruticosa</i>
_____	<i>Stylosanthes guianensis</i>
_____	<i>Vigna oblongifolia</i>

Other browse plants

There are many other dicotyledons commonly browsed by goats, sheep, and other livestock. Since most such plants do not have any common English or Swahili names, a list of Botanical names of a few common examples is given below. Most legumes in this group belong to the subfamily Mimosoideae (M).

Examples of browse plants

Botanical name	Family
<i>Acacia brevispica</i>	Leguminosae (M)
<i>Acacia gerrardii</i>	Leguminosae (M)
<i>Acacia mellifera</i>	Leguminosae (M)
<i>Acacia nilotica</i>	Leguminosae (M)
<i>Acacia nubica</i>	Leguminosae (M)

..../cont.

Browse plants (cont.)

<i>Acacia seyal</i>	Leguminosae (M)
<i>Acacia tortilis</i>	Leguminosae (M)
<i>Achyranthes aspera</i>	Amaranthaceae
<i>Albizia amara</i>	Leguminosae (M)
<i>Balanites aegyptiaca</i>	Balanitaceae
<i>Boscia angustifolia</i>	Capparidaceae
<i>Cadaba farinosa</i>	Capparidaceae
<i>Celosia anthelmintica</i>	Amaranthaceae
<i>Croton dichogamus</i>	Euphorbiaceae
<i>Grewia bicolor</i>	Tiliaceae
<i>Hibiscus lunariifolius</i>	Malvaceae
<i>Justicia exigua</i>	Acanthaceae
<i>Leucas microphylla</i>	Lamiaceae
<i>Phyllanthus guineensis</i>	Euphorbiaceae
<i>Rhus natalensis</i>	Anacardiaceae
<i>Sesbania sesban</i>	Leguminosae (P)
<i>Sida schimperiana</i>	Malvaceae
<i>Solanum incanum</i>	Solanaceae
<i>Tarchonanthus camphoratus</i>	Asteraceae
<i>Terminalia brownii</i>	Combretaceae
<i>Withania somnifera</i>	Solanaceae
<i>Zanthoxylum chalybeum</i>	Rutaceae
<i>Ziziphus mucronata</i>	Rhamnaceae

CLASS 18: LAWN GRASSES

Among the favourite plants in modern East African homes, schools, and other compounds in the cities and towns are lawn grasses. So much so that there is a common saying that “no garden compound is complete without grass lawns”. Grass lawns provide a good setting for flowering plants of any kind. The major lawn grasses are obtained from the following species, some of which have been extensively hybridised to produce what are called cultivars (cultivated varieties). They are all members of the family *Poaceae* or *Gramineae*.

Examples of lawn grasses

Common name	Botanical name
Bermuda grass	<i>Cynodon dactylon</i>
Bradley grass	<i>Cynodon bradleyi</i>
Creeping signal grass	<i>Brachiaria decumbens</i>
Dhoob grass	<i>Cynodon dactylon</i>
Disi	<i>Eragrostis mildbraedii</i>
Kikuyu grass	<i>Pennisetum clandestinum</i>
Madi river grass	<i>Cynodon dactylon</i>
Paspalum	<i>Paspalum notatum</i>
Star grass	<i>Cynodon dactylon</i>
Swaziland grass	<i>Digitaria swazilandensis</i>
Uganda grass	<i>Cynodon transvaalensis</i>

CLASS 19: TIMBER AND ORNAMENTAL TREES

The use of timber plants in East Africa can only be described as very diversified. Timber plants have been in use for a long time and cover many species. Practically every local timber-yielding tree species found in East Africa is used for one purpose or another. Both indigenous and exotic trees are constantly in use and methods to increase and preserve them are the major roles of the Forestry Departments of the EAC countries. A large quantity of available timber is used as building material, in furniture making, making transport machinery (vehicles, boats, trains, etc.) construction, and wood carving among other uses.

Most of the timber plants in the region are from both angiosperms and gymnosperms. The mountain bamboo (*Arundinaria alpina*), which is a member of the angiosperm family, is used widely as building material but is not strictly a timber plant. This is because bamboo is a grass and grasses are non-woody plants that never form true trees. Timber from the monocotyledonous plants is therefore unknown. Timber plants can be categorised as soft woods and hard woods.

Soft woods are the timber-producing gymnosperms, though there are some species in *Podocarpaceae* which actually have hard wood. They are fast growing, yield good quality timber, and form the largest commercial production of timber in the region. Included in the list are *Araucariaceae*, *Cupressaceae*, and *Pinaceae*.

Hard woods are the timber-producing dicotyledons, though some species have wood which is soft in texture. Timber from many woody dicotyledonous species is used for various purposes. The majority of the species in this

category are, however, slow growing and yield poor quality timber. Those with excellent quality timber like mvule (*Milicia excelsa*), nonetheless take many years to mature and become commercially useful.

Attempting to list all timber plants used by East Africans is like trying to produce almost the whole flora of the region. The list is so long that it would actually need to be published as a book by itself. Only a few examples of both soft woods (gymnosperms) and hard woods (angiosperms) will therefore be listed. Since the majority of the timber crops in the region do not have English or trade names, the botanical alphabetical listing will be used here. Any widely understood English or trade name is placed next to the species name and each species is followed by its family name to help readers distinguish soft from hard woods. Exotics are marked with asterisk (*) signs. Most of the timber trees are frequently planted as ornamentals and also to provide shade. Also included in the list are a few common ornamental trees.

The second list is an alphabetical arrangement of common English or trade names of the timber or ornamental trees mentioned in the first list. The use of vernacular names has been avoided since they are so variable and numerous. For example, a widely distributed species in East Africa would have dozens of local names. The following is simply a checklist of the common timber, building poles, and ornamental plants found in the region. It should be noted that all the three *Leguminosae* subfamilies of Caesalpinioideae (C), Mithosoideae (M), and Papilionoideae (P) are represented (See Figures 54-58).

Examples of timber and ornamental trees (by botanical name)

Botanical and Common names	Family
<i>Acacia abyssinica</i>	Leguminosae (M)
<i>Acacia acuminata</i>	Leguminosae (M)
<i>Acacia albida</i> (Apple ring acacia)	Leguminosae (M)
* <i>Acacia aneura</i>	Leguminosae (M)
* <i>Acacia baileyana</i> (Bailey's golden wattle)	Leguminosae (M)
* <i>Acacia cyanophylla</i>	Leguminosae (M)
<i>Acacia drepanolobium</i> (Black galled acacia)	Leguminosae (M)
* <i>Acacia farnesiana</i> (Cassie)	Leguminosae (M)
<i>Acacia lahai</i> (Red thorn)	Leguminosae (M)
* <i>Acacia mearnsii</i> (Black wattle)	Leguminosae (M)
* <i>Acacia melanoxylon</i> (Australian blackwood)	Leguminosae (M)
* <i>Acacia modesta</i>	Leguminosae (M)
<i>Acacia nilotica</i>	Leguminosae (M)
* <i>Acacia podalyriifolia</i> (Silver leaf golden wattle)	Leguminosae (M)
<i>Acacia polyacantha</i> (Falcon's claw acacia)	Leguminosae (M)
* <i>Acacia saligna</i> (Golden wreath wattle)	Leguminosae (M)
<i>Acacia seyal</i> (White galled acacia)	Leguminosae (M)
* <i>Acacia spectabilis</i>	Leguminosae (M)
<i>Acacia tortilis</i>	Leguminosae (M)

..../cont.

Timber and ornamental trees (cont.)

<i>Acacia xanthophloea</i> (Fever tree or Naivasha thorn)	Leguminosae (M)
<i>Acacia zanzibarica</i> (Coast whistling thorn)	Leguminosae (M)
<i>Acokanthera schimperi</i>	Apocynaceae
* <i>Acrocarpus fraxinifolius</i> (Indian ash)	Leguminosae (P)
<i>Adansonia digitata</i> (Baobab)	Bombacaceae
<i>Afzelia quanzensis</i> (Afzelia or mahogany bean)	Leguminosae (C)
<i>Albizia coriaria</i>	Leguminosae (M)
<i>Albizia grandibracteata</i>	Leguminosae (M)
<i>Albizia gummifera</i>	Leguminosae (M)
* <i>Albizia lebbek</i>	Leguminosae (M)
* <i>Albizia procera</i>	Leguminosae (M)
* <i>Albizia stipulate</i>	Leguminosae (M)
<i>Albizia zygia</i>	Leguminosae (M)
* <i>Alstonia boonei</i> (Alstonia)	Apocynaceae
* <i>Anthocleista grandiflora</i> (Cabbage tree)	Loganiaceae
<i>Antiaris toxicaria</i> (False mvule)	Moraceae
<i>Apodytes dimidiata</i> (White pear)	Lcacinaceae
* <i>Araucaria angustifolia</i> (Parana pine)	Araucariaceae
* <i>Araucaria bidwillii</i> (Bunya pine)	Araucariaceae
* <i>Araucaria columnaris</i> (Cook's araucaria)	Araucariaceae

..../cont.

Timber and ornamental trees (cont.)

* <i>Araucaria cunninghamii</i> (Hoop-pine)	Araucariaceae
* <i>Araucaria excelsa</i> (Norfolk Island pine)	Araucariaceae
<i>Arundinaria alpina</i> (Mountain bamboo)	Poaceae
<i>Avicennia marina</i> (Mchu)	Verbenaceae
<i>Balanites aegyptiaca</i> (Desert date)	Balanitaceae
* <i>Bauhinia alba</i> (Camel's foot tree)	Leguminosae (C)
* <i>Bauhinia purpurea</i> (Purple bauhinia)	Leguminosae (C)
<i>Bauhinia tomentosa</i>	Leguminosae (C)
* <i>Bauhinia variegata</i>	Leguminosae (C)
* <i>Bombax malabaricum</i> (Red or silk cotton tree)	Bombacaceae
<i>Bombax rhodognaphalon</i> (E. African Bombax)	Bombacaceae
* <i>Brachychiton acerifolium</i> (Australian flame tree)	Sterculiaceae
<i>Brachylaena huillensis</i> (E. African sandal wood)	Asteraceae
<i>Brachystegia spiciformis</i> (Bean pod tree)	Leguminosae (C)
<i>Breonada salicina</i> (Adina)	Rubiaceae
<i>Bridelia micrantha</i>	Euphorbiaceae
<i>Bruguiera gymnorrhiza</i> (Mangrove)	Rhizophoraceae
* <i>Brunfelsia americana</i>	Solanaceae
<i>Burkea africana</i>	Leguminosae (C)

.../cont.

Timber and ornamental trees (cont.)

* <i>Caesalpinia gilliesii</i>	Leguminosae (C)
* <i>Caesalpinia pulcherrima</i> (Pride of Barbados)	Leguminosae (C)
* <i>Caesalpinia sappan</i> (Sappan wood tree)	Leguminosae (C)
* <i>Caesalpinia sepiaria</i>	Leguminosae (C)
* <i>Caesalpinia spinosa</i> (Tara)	Leguminosae (C)
* <i>Callistemon coccineus</i> (Bottle brush tree)	Leguminosae (C)
* <i>Caesalpinia lanceolatus</i>	Leguminosae (C)
* <i>Caesalpinia phoeniceus</i>	Leguminosae (C)
* <i>Caesalpinia rigidus</i>	Leguminosae (C)
* <i>Caesalpinia salignus</i>	Leguminosae (C)
* <i>Callitris calcarata</i> (Black cypress pine)	Cupressaceae
* <i>Callitris columellaris</i> (Coast cypress pine)	Cupressaceae
* <i>Callitris hugelii</i> (Coast cypress pine)	Cupressaceae
<i>Calodendrum capense</i> (Cape chestnut)	Rutaceae
<i>Canarium schweinfurthii</i> (African canarium)	Burseraceae
<i>Canthium rubrocostatum</i>	Rubiaceae
<i>Calpurnia aurea</i>	Leguminosae
<i>Carapa grandiflora</i> (Crabwood)	Meliaceae
<i>Cassia afrofitula</i> (African laburnum)	Leguminosae (C)

..../cont.

Timber and ornamental trees (cont.)

* <i>Cassia biflora</i>	Leguminosae (C)
* <i>Cassia grandis</i>	Leguminosae (C)
* <i>Cassia nodosa</i> (Pink cassia)	Leguminosae (C)
<i>Cassia sieberiana</i>	Leguminosae (C)
<i>Cassipourea euryoides</i>	Rhizophoraceae
<i>Cassipourea gummiflua</i>	Rhizophoraceae
<i>Cassipourea malosana</i> (Pillarwood)	Rhizophoraceae
<i>Cassipourea ruwensorensis</i>	Rhizophoraceae
* <i>Casuarina cunninghamiana</i> (River oak, Greek oak)	Casuarinaceae
<i>Casuarina equisetifolia</i> (Whistling pine, Beach she-oak)	Casuarinaceae
* <i>Casuarina glauca</i>	Casuarinaceae
* <i>Casuarina suberosa</i>	Casuarinaceae
* <i>Cedrela odorata</i> (Central American cedar)	Meliaceae
* <i>Cedrela toona</i> (Burma cedar)	Meliaceae
* <i>Ceiba pentandra</i> (Kapok or silk cotton tree)	Bombacaceae
<i>Celtis africana</i> (Celtis)	Ulmaceae
<i>Celtis gamphophylla</i> (Stinkwood)	Ulmaceae
<i>Celtis mildbraedii</i> (African Celtis)	Ulmaceae
<i>Ceriops tagal</i> (Mangrove, Mkanda)	Rhizophoraceae
<i>Chrysophyllum albidum</i> (White star apple)	Sapotaceae

.../cont.

Timber and ornamental trees (cont.)

<i>Chrysophyllum gorongosanum</i>	Sapotaceae
<i>Chrysophyllum viridifolium</i>	Sapotaceae
<i>Cola clavata</i>	Sterculiaceae
<i>Cola greenwayi</i>	Sterculiaceae
<i>Cordia africana</i>	Boraginaceae
* <i>Cordia alliodora</i>	Boraginaceae
<i>Cordia millenii</i>	Boraginaceae
* <i>Cotoneaster franchetii</i>	Rosaceae
* <i>Cotoneaster pannosa</i>	Rosaceae
<i>Craibia elliottii</i>	Leguminosae (P)
* <i>Crataegus crenulata</i>	Rosaceae
<i>Croton macrostachyus</i>	Euphorbiaceae
<i>Croton megalocarpus</i>	Euphorbiaceae
* <i>Cryptomeria japonica</i> (Japanese cedar)	Taxodiaceae
* <i>Cupressus arizonica</i> (Arizona cypress)	Cupressaceae
* <i>Cupressus benthamii</i> (Bentham's cypress)	Cupressaceae
* <i>Cupressus cashmeriana</i> (Kashmish cypress)	Cupressaceae
* <i>Cupressus funebris</i> (Weeping, funeral or mourning cypress)	Cupressaceae
* <i>Cupressus lusitanica</i> (Mexican cypress)	Cupressaceae

..../cont.

Timber and ornamental trees (cont.)

* <i>Cupressus macrocarpa</i> (Monterey cypress)	Cupressaceae
* <i>Cupressus pyramidalis</i>	Cupressaceae
* <i>Cupressus sempervirens</i> (Mediterranean cypress)	Cupressaceae
* <i>Cupressus torulosa</i> (Himalayan cypress)	Cupressaceae
<i>Dalbergia melanoxylon</i> (African blackwood)	Leguminosae (P)
* <i>Dalbergia sissoo</i> (Sissoo)	Leguminosae (P)
<i>Delonix elata</i>	Leguminosae (C)
* <i>Delonix regia</i> (Flamboyant)	Leguminosae (C)
<i>Diospyros abyssinica</i> (Mdaa-mwitu)	Ebenaceae
<i>Diospyros mespiliformis</i> (African ebony)	Ebenaceae
* <i>Dodonaea lobulata</i>	Sapindaceae
<i>Dodonaea viscosa</i>	Sapindaceae
<i>Dombeya torrida</i>	Sapindaceae
<i>Dombeya kirkii</i>	Sapindaceae
<i>Drypetes gerrardii</i>	Euphorbiceae
<i>Ekebergia capensis</i> (Ekebergia)	Meliaceae
<i>Elaeodendron buchananii</i>	Celastraceae
<i>Englerophytum natalense</i>	Sapotaceae
<i>Entada abyssinica</i>	Leguminosae (M)
<i>Entandrophragma angolense</i> (African mahogany)	Meliaceae

..../cont.

Timber and ornamental trees (cont.)

<i>Erythrina abyssinica</i> (Red hot poker tree)	Leguminosae (P)
* <i>Erythrina corallodendron</i>	Leguminosae (P)
* <i>Erythrina lysistemon</i> (Kaffir boom)	Leguminosae (P)
<i>Erythrophleum suaveolens</i>	Leguminosae (C)
* <i>Eucalyptus albens</i> (white box)	Myrtaceae
* <i>Eucalyptus blakelyi</i>	Myrtaceae
* <i>Eucalyptus bicostata</i> (close to southern blue gum)	Myrtaceae
* <i>Eucalyptus bosistoana</i> (Bosisto's box, coast grey box)	Myrtaceae
* <i>Eucalyptus botryoides</i> (Bangalay)	Myrtaceae
* <i>Eucalyptus calophylla</i> (Marri)	Myrtaceae
* <i>Eucalyptus camaldulensis</i> (Murray or River red gum)	Myrtaceae
* <i>Eucalyptus citriodora</i> (Lemon scented gum)	Myrtaceae
* <i>Eucalyptus cladocalyx</i> (Sugar gum)	Myrtaceae
* <i>Eucalyptus crebra</i> (Narrow-leaved ironbark)	Myrtaceae
* <i>Eucalyptus cussonioides</i>	Euphorbiaceae
* <i>Eucalyptus diversicolor</i> (Karri)	Myrtaceae
* <i>Eucalyptus drepanophylla</i>	Myrtaceae
* <i>Eucalyptus fastigata</i> (Brown barrel)	Myrtaceae
* <i>Eucalyptus ficifolia</i> (Red flowering gum)	Myrtaceae

..../cont.

Timber and ornamental trees (cont.)

* <i>Eucalyptus globulus</i> (Southern blue gum)	Myrtaceae
* <i>Eucalyptus gomphocephala</i> (Tuart)	Myrtaceae
* <i>Eucalyptus grandis</i> (Flooded or Rose gum)	Myrtaceae
* <i>Eucalyptus gummifera</i> (Red bloodwood)	Myrtaceae
* <i>Eucalyptus leucoxylon</i> (Blue gum)	Myrtaceae
* <i>Eucalyptus longifolia</i> (Woollybutt)	Myrtaceae
* <i>Eucalyptus maculata</i> (Spotted gum)	Myrtaceae
* <i>Eucalyptus maidenii</i> (Maiden's gum)	Myrtaceae
* <i>Eucalyptus melliodora</i> (Yellow box, yellow ironbark)	Myrtaceae
* <i>Eucalyptus microcorys</i> (Tallow-wood)	Myrtaceae
* <i>Eucalyptus microtheca</i> (Coolibah)	Myrtaceae
* <i>Eucalyptus muelleriana</i>	Myrtaceae
* <i>Eucalyptus oblicqua</i> (Messmate stringybark)	Myrtaceae
* <i>Eucalyptus paniculata</i> (Grey ironbark)	Myrtaceae
* <i>Eucalyptus pellita</i> (Large-fruited red mahogany)	Myrtaceae
* <i>Eucalyptus pilularis</i> (Black-butt)	Myrtaceae
* <i>Eucalyptus polyanthemus</i>	Myrtaceae
* <i>Eucalyptus punctata</i>	Myrtaceae

.../cont.

Timber and ornamental trees (cont.)

<i>*Eucalyptus regnans</i> (Mountain ash, Stringy gum)	Myrtaceae
<i>*Eucalyptus resinifera</i>	Myrtaceae
<i>*Eucalyptus robusta</i> (Swampy gum)	Myrtaceae
<i>*Eucalyptus rudis</i>	Myrtaceae
<i>*Eucalyptus saligna</i> (Sydney blue gum)	Myrtaceae
<i>*Eucalyptus siderophloia</i>	Myrtaceae
<i>*Eucalyptus sideroxylon</i> (Mugga or Red ironbark)	Myrtaceae
<i>*Eucalyptus tereticornis</i> (Forest red gum)	Myrtaceae
<i>*Eucalyptus viminalis</i> (White gum)	Myrtaceae
<i>Euphorbia candelabrum</i>	Euphorbiaceae
<i>Fagaropsis angolensis</i>	Rutaceae
<i>Ficus hochstetteri</i>	Moraceae
<i>Ficus mallatocarpa</i>	Moraceae
<i>Ficus natalensis</i> (Bark cloth fig)	Moraceae
<i>*Ficus religiosa</i> (Peepul or Pipal)	Moraceae
<i>Ficus sur</i>	Moraceae
<i>Ficus sycomorus</i> (Sycomore fig)	Moraceae
<i>Ficus thonningii</i>	Moraceae
<i>*Fraxinus berlandierana</i> (Mexican ash)	Oleaceae
<i>Fraxinus velutina</i>	Oleaceae
<i>Funtumia africana</i> (Bastard wild rubber)	Apocynaceae
<i>*Funtumia elastica</i> (Wild rubber)	Apocynaceae

..../cont.

Timber and ornamental trees (cont.)

* <i>Gardenia globosa</i> (South African gardenia)	Rubiaceae
* <i>Gmelina arborea</i>	Verbenaceae
* <i>Grevillea robusta</i> (Grevillea or Silky oak)	Proteaceae
<i>Guttifera volkensii</i>	Guttiferae
<i>Hagenia abyssinica</i> (Hagenia)	Rosaceae
* <i>Hakea saligna</i>	Proteaceae
<i>Harungana madagascariensis</i>	Hypericaceae
<i>Heywoodia lucens</i>	Euphorbiaceae
<i>Hirtella zanzibarica</i>	Rosaceae
<i>Hypericum revolutum</i> (Giant St. John's wort)	Hypericaceae
* <i>Jacaranda mimosifolia</i> (Jacaranda)	Bignoniaceae
<i>Juniperus procera</i> (East African cedar or pencil cedar)	Cupressaceae
<i>Khaya</i> spp. (African mahogany)	Meliaceae
<i>Kigelia africana</i> (African sausage tree)	Bignoniaceae
<i>Lecaniodiscus fraxinifolius</i>	Sapindaceae
* <i>Leptospermum laevigatum</i> (Australian myrtle, Coast tea tree)	Myrtaceae
* <i>L. petersonii</i> (Lemon scented tea tree)	Myrtaceae
<i>Ligustrum lucidum</i>	Oleaceae
<i>Ligustrum ovalifolium</i>	Oleaceae
* <i>Litchi chinensis</i> (Litchi)	Sapindaceae

.../cont.

Timber and ornamental trees (cont.)

<i>Lovoa swynnertonii</i> (East African walnut)	Meliaceae
<i>Macaranga capensis</i> (Mbawa)	Euphorbiaceae
<i>Macaranga kilimandscharica</i>	Euphorbiaceae
<i>Maesopsis eminii</i> (Musizi)	Rhamnaceae
<i>Malacantha alnifolia</i>	Sapotaceae
<i>Manilkara butugi</i> (Ludilio)	Sapotaceae
<i>Manilkara discolor</i>	Sapotaceae
* <i>Margaritaria discoidea</i>	Euphorbiaceae
<i>Markhamia lutea</i>	Bignoniaceae
<i>Maytenus undata</i>	Celastraceae
* <i>Melaleuca armillaris</i>	Myrtaceae
* <i>Melaleuca stypheliodes</i>	Myrtaceae
* <i>Melia azedarach</i> (Persian lilac)	Meliaceae
<i>Melia volkensii</i>	Meliaceae
<i>Milicia excelsa</i> (Mvule or Iroko)	Moraceae
<i>Millettia dura</i>	Leguminosae (P)
<i>Mimusops aedificatoria</i>	Sapotaceae
<i>Mimusops bagshawei</i>	Sapotaceae
<i>Mimusops kummel</i>	Sapotaceae
* <i>Myrtus communis</i> (Myrtle)	Myrtaceae
<i>Neoboutonia macrocalyx</i>	Euphorbiaceae
<i>Newtonia bichananii</i>	Leguminosae
<i>Nuxia congesta</i>	Loganiaceae

..../cont.

Timber and ornamental trees (cont.)

<i>Ocotea kenyensis</i>	Lauraceae
<i>Ocotea usambarensis</i> (E. African camphor)	Lauraceae
<i>Oldfieldia somalensis</i>	Euphorbiaceae
<i>Olea capensis</i> (E. African olive, Elgon olive)	Oleaceae
<i>Olea europaea</i> (Brown or Wild olive)	Oleaceae
<i>Olinia rochetiana</i>	Oliniaceae
<i>Oncoba routledgei</i>	Flacourtiaceae
<i>Pachystela brevipes</i>	Sapotaceae
<i>Pachystela subverticillata</i>	Sapotaceae
<i>Paramacrolobium coeruleum</i>	Leguminosae (C)
<i>Pericopsis angolensis</i> (E. African afrormosia)	Leguminosae (P)
<i>Phoenix reclinata</i> (Wild date palm)	Aracaceae
* <i>Pinus canariensis</i> (Canary Island pine)	Pinaceae
* <i>Pinus caribaea</i> (Caribbean pitch pine)	Pinaceae
* <i>Pinus elliottii</i> (Slash pine)	Pinaceae
* <i>Pinus halepensis</i> (Aleppo pine)	Pinaceae
* <i>Pinus insularis</i>	Pinaceae
* <i>Pinus kesiya</i> (Khasi pine)	Pinaceae
* <i>Pinus massoniana</i> (Masson pine)	Pinaceae
* <i>Pinus michoacana</i> (Michoacan pine)	Pinaceae
* <i>Pinus montezumae</i> (Montezuma pine)	Pinaceae

..../cont.

Timber and ornamental trees (cont.)

* <i>Pinus oocarpa</i> (Mexicana pine)	Pinaceae
* <i>Pinus patula</i> (Mexican weeping pine)	Pinaceae
* <i>Pinus pinaster</i> (Maritime pine)	Pinaceae
* <i>Pinus pinea</i> (Italian stone pine)	Pinaceae
* <i>Pinus pseudostrobus</i> (False wymouth pine)	Pinaceae
* <i>Pinus radiata</i> (Monterey pine)	Pinaceae
* <i>Pinus taeda</i> (Loblolly pine)	Pinaceae
<i>Pistacia aethiopica</i>	Anacardiaceae
<i>Podocarpus falcatus</i> (Poded or E. African yellow wood)	Podocarpaceae
* <i>Podocarpus henkelii</i> (Falcate yellow wood)	Podocarpaceae
<i>Podocarpus latifolius</i> (Podo or E. African yellow wood)	Podocarpaceae
<i>Podocarpus usambarensis</i> (Podo)	Podocarpaceae
<i>Polyscias fulva</i>	Araliaceae
<i>Polyscias kikuyensis</i>	Araliaceae
<i>Pouteria adolfi-friederici</i>	Sapotaceae
<i>Pouteria altissima</i>	Sapotaceae
<i>Premna maxima</i>	Verbenaceae
<i>Prunus africana</i> (Red stinkwood)	Rosaceae
<i>Pseudospondias microcarpa</i>	Anacardiaceae
<i>Rapanea melanophloeos</i> (Rapanea)	Myrsinaceae
<i>Rauvolfia caffra</i> ("Quinine" tree)	Apocynaceae

.../cont.

Timber and ornamental trees (cont.)

<i>Rhizophora mucronata</i> (Mangrove, Mkoko)	Rhizophoraceae
<i>Ricinodendron heudelotii</i>	Euphorbiaceae
* <i>Schefflera actinophylla</i> (Umbrella tree)	Araliaceae
* <i>Schinus molle</i> (Pepper tree)	Anacardiaceae
<i>Sclerocarya birrea</i>	Anacardiaceae
<i>Senna alexandrina</i>	Leguminosae (C)
<i>Senna septentrionalis</i>	Leguminosae (C)
<i>Senna siamea</i>	Leguminosae (C)
<i>Senna spectabilis</i>	Leguminosae (C)
<i>Spathodea campanulata</i> (Flame of the forest or African tulip tree)	Bignoniaceae
<i>Spirostachys africana</i>	Euphorbiaceae
<i>Sterculia africana</i> (Mgoza)	Sterculiaceae
<i>Sterculia appendiculata</i> (Mfunu or Msefu)	Sterculiaceae
* <i>Sterculia foetida</i>	Sterculiaceae
<i>Sterculia stenocarpa</i>	Sterculiaceae
<i>Strombosia scheffleri</i>	Olaceae
<i>Suregada procera</i>	Euphorbiaceae
* <i>Syncarpia glomulifera</i> (Turpentine tree)	Myrtaceae
* <i>Tecoma stans</i>	Bignoniaceae
<i>Tectona grandis</i> (Teak)	Verbenaceae

..../cont.

Timber and ornamental trees (cont.)

<i>Terminalia brevipes</i> (Terminalia)	Combretaceae
<i>Terminalia brownii</i>	Combretaceae
* <i>Terminalia catappa</i> (Bastard almond or Indian almond)	Combretaceae
<i>Terminalia kilimandsharica</i> (Terminalia)	Combretaceae
<i>Terminalia mollis</i>	Combretaceae
<i>Terminalia polycarpa</i>	Combretaceae
<i>Terminalia prunioides</i>	Combretaceae
<i>Terminalia spinosa</i>	Combretaceae
<i>Thespesia garckeana</i>	Malvaceae
* <i>Tipuana tipu</i> (Pride of Bolivia)	Leguminosae
<i>Trichilia emetic</i>	Meliaceae
* <i>Tristania conferta</i> (Brush box)	Myrtaceae
<i>Vitex doniana</i> (Black plum)	Verbenaceae
<i>Vitex keniensis</i> (Meru oak)	Verbenaceae
<i>Warburgia ugandensis</i> (E. African Greenheart)	Canellaceae
<i>Zanthoxylum gillettii</i> (African satinwood)	Rutaceae
<i>Zanthoxylum mildbraedii</i>	Rutaceae

Examples of timber and ornamental trees (by English/trade name)

English or Trade name	Botanical name
Adina	<i>Adina microcephala</i>
African blackwood	<i>Dalbergia melanoxylon</i>
African canarium	<i>Canarium schweinfurthii</i>
African ebony	<i>Diospyros mespiliformis</i>
African laburnum	<i>Cassia afrodistula</i>
African mahogany	<i>Khaya</i> spp.
African satinwood	<i>Zanthoxylum gillettii</i>
African sausage tree	<i>Kigelia africana</i>
Afzelia	<i>Afzelia quanzensis</i>
Aleppo pine	<i>Pinus halepensis</i>
Alstonia	<i>Alstonia boonei</i>
Apple ring acacia	<i>Acacia albida</i>
Australian blackwood	<i>Acacia melanoxylon</i>
Australian flame tree	<i>Brachychiton acerifolium</i>
Australian myrtle	<i>Leptospermum laevigatum</i>
Arizona cypress	<i>Cupressus arizonica</i>
Bailey's golden wattle	<i>Acacia baileyana</i>
Baobab	<i>Adansonia digitata</i>
Bangalay	<i>Eucalyptus botryoides</i>
Bark cloth fig	<i>Ficus natalensis</i>
Bastard almond	<i>Terminalia catappa</i>
Bastard wild rubber	<i>Funtumia africana</i>
Beach she-oak	<i>Casuarina equisetifolia</i>

..../cont.

Timber and ornamental trees (cont.)

Bean pod tree	<i>Brachystegia spiciformis</i>
Bentham's cypress	<i>Cupressus benthamii</i>
Blackbutt	<i>Eucalyptus pilularis</i>
Black cypress pine	<i>Callitris calcarata</i>
Black galled acacia	<i>Acacia drepanolobium</i>
Black plum	<i>Vitex doniana</i>
Black wattle	<i>Acacia mearnsii</i>
Blue gum	<i>Eucalyptus leucoxylon</i>
Bosisto's box	<i>Eucalyptus bosistoana</i>
Bottle brush tree	<i>Callistemon viminalis</i>
Brown barrel	<i>Eucalyptus fastigata</i>
Brown olive	<i>Olea europaea</i>
Bunya pine	<i>Araucaria bidwillii</i>
Burma cedar	<i>Cedrela odorata</i>
Brush box	<i>Tristania conferta</i>
Cabbage tree	<i>Anthocleista grandiflora</i>
Camel's foot tree	<i>Bauhinia</i> spp.
Canary Island pine	<i>Pinus canariensis</i>
Cape chestnut	<i>Colledendrum capense</i>
Caribbean pitch pine	<i>Pinus caribaea</i>
Cassie	<i>Acacia farnesiana</i>
Celtis	<i>Celtis mildbraedii</i>
Central American cedar	<i>Cedrela odorata</i>
Coast cypress pine	<i>Callitris columellaris</i>

..../cont.

Timber and ornamental trees (cont.)

Coast grey box	<i>Eucalyptus bosistoana</i>
Coast tea tree	<i>Leptospermum laevigatum</i>
Coast whistling thorn	<i>Acacia zanzibarica</i>
Cockwood	<i>Ricinodendron tomentellum</i>
Cook's araucaria	<i>Araucaria columnaris</i>
Coolibah	<i>Eucalyptus microtheca</i>
Crabwood	<i>Carapa grandiflora</i>
Desert date	<i>Balanites aegyptiaca</i>
East African afrormosia	<i>Pericopsis angolensis</i>
East African bombax	<i>Bombax rhodognaphalon</i>
East African camphor	<i>Ocotea usambarensis</i>
East African cedar	<i>Juniperus procera</i>
East African greenheart	<i>Warburgia ugandensis</i>
East African olive	<i>Olea capensis</i>
East African sandal wood	<i>Brachylaena huillensis</i>
East African walnut	<i>Lovoa swynnertonii</i>
East African yellow wood	<i>Podocarpus falcatus</i>
East African yellow wood	<i>Podocarpus latifolius</i>
Ekebergia	<i>Ekebergia capensis</i>
Elgon olive	<i>Olea capensis</i>
Falcate yellow wood	<i>Podocarpus henkelii</i>
Falcon's claw acacia	<i>Acacia polyacantha</i>
False mvule	<i>Antiaris toxicaria</i>
Fever tree	<i>Acacia xanthophloea</i>

..../cont.

Timber and ornamental trees (cont.)

Flamboyant	<i>Delonix regia</i>
Flame of the forest	<i>Spathodea campanulata</i>
Flooded gum	<i>Eucalyptus grandis</i>
Forst red gum	<i>Eucalyptus tereticornis</i>
Funeral cypress	<i>Cupressus funebris</i>
Giant St. John's wort	<i>Hypericum revolutum</i>
Gedu nohor	<i>Eutandrophragma angolense</i>
Golden wreath wattle	<i>Acacia saligna</i>
Greek oak	<i>Casuarina cunninghamiana</i>
Grevillea	<i>Grevillea robusta</i>
Grey ironbark	<i>Eucalyptus paniculata</i>
Hagenia	<i>Hagenia abyssinica</i>
Himalayan cypress	<i>Cupressus torulosa</i>
Hoop pine	<i>Araucaria cunninghamii</i>
Indian almond	<i>Terminalia catappa</i>
Indian ash	<i>Acrocarpus fraxinifolius</i>
Iroko	<i>Milicia excelsa</i>
Italian stone pine	<i>Pinus pinea</i>
Jacaranda	<i>Jacaranda mimosifolia</i>
Japanese cedar	<i>Cryptomeria japonica</i>
Kaffir boom	<i>Erythrina lysistemon</i>
Kapok	<i>Ceiba pentandra</i>
Karri	<i>Eucalyptus diversicolor</i>
Kashmir cypress	<i>Cupressus cashmeriana</i>

..../cont.

Timber and ornamental trees (cont.)

Khasi pine	<i>Pinus kesiya</i>
Large fruited red mahogany	<i>Eucalyptus pellita</i>
Lemon scented gum	<i>Eucalyptus citriodora</i>
Lemon scented tea tree	<i>Leptospermum petersonii</i>
Litchi	<i>Litchi chinensis</i>
Ludulio	<i>Manilkara butugi</i>
Loblolly pine	<i>Pinus taeda</i>
Maiden's gum	<i>Eucalyptus maidenii</i>
Mangrove	<i>Bruguiera, Ceriops, Rhizophora</i>
Maritime pine	<i>Pinus pinaster</i>
Marri	<i>Eucalyptus calophylla</i>
Masson pine	<i>Pinus massoniana</i>
Mbawa	<i>Macaranga capensis</i>
Mchu	<i>Avicennia marina</i>
Mdaa-mwitu	<i>Diopsiros abyssinica</i>
Mediterranean cypress	<i>Cupressus sempervirens</i>
Meru oak	<i>Vitex keniensis</i>
Messmate stringbark	<i>Eucalyptus obliqua</i>
Mexican ash	<i>Fraxinus berlandierana</i>
Mexican cypress	<i>Cupressus lusitanica</i>
Mexican pine	<i>Pinus oocarpa</i>
Mexican weeping pine	<i>Pinus patula</i>
Mfunne	<i>Sterculia appendiculata</i>
Mgoza	<i>Sterculia africana</i>

..../cont.

Timber and ornamental trees (cont.)

Michaocan pine	<i>Pinus michoacana</i>
Mkanda	<i>Ceriops tagal</i>
Mkoko	<i>Rhizophora mucronata</i>
Monterey cypress	<i>Cupressus macrocarpa</i>
Monterey pine	<i>Pinus radiata</i>
Montezuma ash	<i>Eucalyptus regnans</i>
Mountain bamboo	<i>Arundinaria alpina</i>
Mourning pine	<i>Cupressus funebris</i>
Msefu	<i>Sterculia appendiculata</i>
Mugga ironbark	<i>Eucalyptus sideroxylon</i>
Muna	<i>Pouteria adolfi-friedericii</i>
Murray gum	<i>Eucalyptus camaldulensis</i>
Musuzi	<i>Maesopsis eminii</i>
Mvule	<i>Milicia excelsa</i>
Myrtle	<i>Myrtus communis</i>
Naivasha thorn	<i>Acacia xanthophloea</i>
Nandi flame	<i>Spathodea campanulata</i>
Narrow leaved ironbark	<i>Eucalyptus crebra</i>
Norfolk Island pine	<i>Araucaria excelsa</i>
Parana pine	<i>Araucaria angustifolia</i>
Peepul	<i>Ficus religiosa</i>
Pencil cedar	<i>Juniperus procera</i>
Pepper tree	<i>Schinus molle</i>
Persian lilac	<i>Melia azedarach</i>

..../cont.

Timber and ornamental trees (cont.)

Pillarwood	<i>Cassipourea malosana</i>
Pink cassia	<i>Cassia nodosa</i>
Pipal	<i>Ficus religiosa</i>
Podo	<i>Podocarpus</i> spp.
Pride of Barbados	<i>Caesalpinia pulcherrima</i>
Purple bauhinia	<i>Bauhinia purpurea</i>
“Quinine” tree	<i>Rauvolfia caffra</i>
Rapanea	<i>Rapanea melanophloeos</i>
Red bloodwood	<i>Eucalyptus gummifera</i>
Red cotton tree	<i>Bombax malabaricum</i>
Red flowering gum	<i>Eucalyptus ficifolia</i>
Red hot poker tree	<i>Erythrina abyssinica</i>
Red stinkwood	<i>Prunus africana</i>
Red thorn	<i>Acacia lahai</i>
River red gum	<i>Eucalyptus camaldulensis</i>
Rose gum	<i>Eucalyptus grandis</i>
Sappan wood tree	<i>Caesalpinia sappan</i>
Sidney blue gum	<i>Eucalyptus saligna</i>
Silk cotton tree	<i>Bombax malabaricum</i>
Silk cotton tree	<i>Ceiba pentandra</i>
Silky oak	<i>Grevillea robusta</i>
Silver leaf golden wattle	<i>Acacia podalyriifolia</i>
Sissoo	<i>Dalbergia sissoo</i>
Slash pine	<i>Pinus elliottii</i>

..../cont.

Timber and ornamental trees (cont.)

South African gardenia	<i>Gardenia globosa</i>
Southern blue gum	<i>Eucalyptus globulus</i>
Spotted gum	<i>Eucalyptus maculata</i>
Stinkwood	<i>Celtis durandii</i>
Stringy gum	<i>Eucalyptus regnans</i>
Sugar gum	<i>Eucalyptus cladocalyx</i>
Swamp gum	<i>Eucalyptus robusta</i>
Sycamore fig	<i>Ficus sycomorus</i>
Sydney blue gum	<i>Eucalyptus saligna</i>
Tallow wood	<i>Eucalyptus microcorys</i>
Tara	<i>Caesalpinia spinosa</i>
Teak	<i>Tectona grandis</i>
Terminalia	<i>Terminalia</i> spp.
Tipa	<i>Tipuana tipu</i>
Tuart	<i>Eucalyptus gomphocephala</i>
Turpentine	<i>Syncarpia glomulifera</i>
Weeping cypress	<i>Cupressus funebris</i>
White box	<i>Eucalyptus albens</i>
White galled acacia	<i>Acacia seyal</i>
White gum	<i>Eucalyptus viminalis</i>
White pear	<i>Apodytes dimidiata</i>
White star apple	<i>Chrysophyllum albidum</i>
Whistling pine	<i>Casuarina equisetifolia</i>
Wild date palm	<i>Phoenix reclinata</i>

..../cont.

Timber and ornamental trees (cont.)

Wild olive	<i>Olea europaea</i>
Wild rubber	<i>Funtumia elastica</i>
Woolly butt	<i>Eucalyptus longifolia</i>
Yellow box	<i>Eucalyptus melliodora</i>
Yellow ironbark	<i>Eucalyptus melliodora</i>

Section 3

TYPE B CLASSES: Commercial Classification

CLASS 1: FOOD CROPS

Examples of major food crops

Common name	Botanical name	Utilisation
Banana	<i>Musa</i> spp. (Musaceae)	Starchy fruit
Bean (Common or Kidney)	<i>Phaseolus vulgaris</i> (Leguminosae-P)	Pulse
Cassava	<i>Manihot esculenta</i> (Euphorbiaceae)	Starchy root
Corn	<i>Zea mays</i> (Poaceae)	Cereal
Cowpea	<i>Vigna unguiculata</i> (Leguminosae-P)	Pulse, Vegetable
Maize	<i>Zea mays</i> (Poaceae)	Cereal
Millet (Bulrush)	<i>Pennisetum typhoideum</i> (Poaceae)	Cereal
Millet (Finger)	<i>Eleusine coracana</i> (Poaceae)	Cereal
Pigeon pea	<i>Cajanus cajan</i> (Leguminosae – P)	Pulse
Plantain	<i>Musa</i> spp. (Musaceae)	Starchy food
Potato	<i>Solanum tuberosum</i> (Solanaceae)	Starchy tuber

..../cont.

Major food crops (cont.)

Potato (Sweet)	<i>Ipomoea batatas</i> (Convolvulaceae)	Starchy root
Rice	<i>Oryza sativa</i> (Poaceae)	Cereal
Sorghum	<i>Sorghum bicolor</i> (Poaceae)	Cereal
Wheat	<i>Triticum aestivum</i> (Poaceae)	Cereal

Examples of minor food crops

Common name	Botanical name	Utilisation
Bambara groundnut	<i>Voandzeia subterranea</i> (Leguminosae – P)	Pulse
Bean (Hyacinth)	<i>Lablab purpureus</i> (Leguminosae – P)	Pulse
Coco yam	<i>Colocasia esculenta</i> (Araceae)	Starchy tuber
Coco yam (New)	<i>Xanthosoma sagittifolium</i> (Araceae)	Starchy tuber
Gourd	<i>Lagenaria siceraria</i> (Cucurbitaceae)	Starchy fruit, Vegetable
Gram	<i>Cicer arietinum</i> (Leguminosae – P)	Pulse
Gram (Black)	<i>Vigna mungo</i> (Leguminosae – P)	Pulse
Gram (Green)	<i>Vigna radiata</i> (Leguminosae – P)	Pulse

..../cont.

Minor food crops (cont.)

Millet (Italian)	<i>Setaria italica</i> (Poaceae)	Cereal
Millet (Proso)	<i>Panicum miliaceum</i> (Poaceae)	Cereal
Pumpkin	<i>Cucurbita maxima</i> (Cucurbitaceae)	Starchy fruit
Teff	<i>Eragrostis tef</i> (Poaceae)	Cereal
Yam	<i>Dioscorea alata</i> (Dioscoreaceae)	Starchy root

CLASS 2: CASH CROPS

Examples of major cash crops

Common name	Botanical name	Utilisation
Barley	<i>Hordeum vulgare</i> (Poaceae)	Beverage, cereal
Cashew nut	<i>Anacardium occidentale</i> (Anacardiaceae)	Edible nut
Clove	<i>Eugenia caryophyllus</i> (Myrtaceae)	Oil, spice
Coffee (Arabica)	<i>Coffea arabica</i> (Rubiaceae)	Beverage
Coffee (Robusta)	<i>Coffea canephora</i> (Rubiaceae)	Beverage

.../cont.

Minor food crops (cont.)

Millet (Italian)	<i>Setaria italica</i> (Poaceae)	Cereal
Millet (Proso)	<i>Panicum miliaceum</i> (Poaceae)	Cereal
Pumpkin	<i>Cucurbita maxima</i> (Cucurbitaceae)	Starchy fruit
Teff	<i>Eragrostis tef</i> (Poaceae)	Cereal
Yam	<i>Dioscorea alata</i> (Dioscoreaceae)	Starchy root

CLASS 2: CASH CROPS

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Coffee (Arabica)	<i>Coffea arabica</i> (Rubiaceae)	Beverage
Coffee (Robusta)	<i>Coffea canephora</i> (Rubiaceae)	Beverage

.../cont.

Major cash crops (cont.)

Cotton (Egyptian)	<i>Gossypium barbadense</i> (Malvaceae)	Fibre, oil
Cotton (Sea Island)	<i>Gossypium barbadense</i> (Malvaceae)	Fibre, oil
Cotton (Upland)	<i>Gossypium hirsutum</i> (Malvaceae)	Fibre, oil
Groundnut	<i>Arachis hypogaea</i> (Leguminosae – P)	Oilseed
Pyrethrum	<i>Chrysanthemum cinerariifolium</i> (Asteraceae)	Insecticide
Sisal	<i>Agave sisalana</i> (Agavaceae)	Fibre
Sugar	<i>Saccharum officinarum</i> (Poaceae)	Beverage, condiment
Tea	<i>Camellia sinensis</i> (Theaceae)	Beverage
Sunflower	<i>Helianthus annuus</i> (Asteraceae)	Oilseed
Tobacco	<i>Nicotiana tabacum</i> (Solanaceae)	Stimulant
Wattle (Black)	<i>Acacia mearnsii</i> (Leguminosae – M)	Tannin

Note: Robusta coffee is a major cash crop in Uganda.

Examples of minor cash crops

Common name	Botanical name	Utilisation
Annatto	<i>Bixa orellana</i> (Bixaceae)	Dye
Bean (Butter)	<i>Phaseolus lunatus</i> (Leguminosae – P)	Pulse
Betel leaf	<i>Piper betel</i> (Piperaceae)	Masticatory
Betel nut	<i>Areca catechu</i> (Arecaceae)	Masticatory
Buckwheat	<i>Fagopyrum esculentum</i> (Polygonaceae)	Cereal
Castor	<i>Ricinus communis</i> (Euphorbiaceae)	Oilseed
Cedar oil	<i>Juniperus procera</i> (Cupressaceae)	Essential oil
Cichory	<i>Cichorium intybus</i> (Asteraceae)	Beverage, vegetable
Chillies	<i>Capsicum frutescens</i> (Solanaceae)	Spice
Coconut	<i>Cocos nucifera</i> (Arecaceae)	Oilseed
Coriander	<i>Coriandrum sativum</i> (Apiaceae)	Spice
Geranium	<i>Pelargonium graveolens</i> (Geraniaceae)	Essential oil
Groundnut	<i>Arachis hypogaea</i> (Leguminosae – P)	Oilseed
Kapok	<i>Ceiba pentandra</i> (Bombacaceae)	Fibre

..../cont.

Minor cash crops (cont.)

Leptospermum	<i>Leptospermum citratum</i> (Myrtaceae)	Essential oil
Miraa	<i>Catha edulis</i> (Celastraceae)	Stimulant
New Zealand flax	<i>Phormium tenax</i> (Phormiaceae)	Fibre
Oats	<i>Avena sativa</i> (Poaceae)	Cereal
Rosemary	<i>Rosmarinus officinalis</i> (Lamiaceae)	Essential oil
Simsim	<i>Sesamum orientale</i> (Pedaliaceae)	Oilseed

CLASS 3: COMMERCIAL HORTICULTURAL CROPS

Examples of commercial horticultural crops

Common name	Botanical name	Utilisation
Apple	<i>Pyrus malus</i> (Rosaceae)	Fruit
Artichoke (Globe)	<i>Cynara scolymus</i> (Asteraceae)	Vegetable
Artichoke (Jerusalem)	<i>Helianthus tuberosus</i> (Asteraceae)	Vegetable

..../cont.

Minor cash crops (cont.)

Leptospermum	<i>Leptospermum citratum</i> (Myrtaceae)	Essential oil
Miraa	<i>Catha edulis</i> (Celastraceae)	Stimulant
New Zealand flax	<i>Phormium tenax</i> (Phormiaceae)	Fibre
Oats	<i>Avena sativa</i> (Poaceae)	Cereal
Rosemary	<i>Rosmarinus officinalis</i> (Lamiaceae)	Essential oil
Simsim	<i>Sesamum orientale</i> (Pedaliaceae)	Oilseed

CLASS 3: COMMERCIAL HORTICULTURAL CROPS

Examples of commercial horticultural crops

Common name	Botanical name	Utilisation
Apple	<i>Pyrus malus</i> (Rosaceae)	Fruit
Artichoke (Globe)	<i>Cynara scolymus</i> (Asteraceae)	Vegetable
Artichoke (Jerusalem)	<i>Helianthus tuberosus</i> (Asteraceae)	Vegetable

..../cont.

Commercial horticultural crops (cont.)

Asparagus	<i>Asparagus officinalis</i> (Asparagaceae)	Vegetable
Aubergine	<i>Solanum melongena</i> (Solanaceae)	Vegetable
Avocado	<i>Persea americana</i> (Lauraceae)	Fruit
Bean (Broad)	<i>Vicia faba</i> (Leguminosae – P)	Vegetable
Bean (Common or Kidney)	<i>Phaseolus vulgaris</i> (Leguminosae – P)	Vegetable
Beetroot	<i>Beta vulgaris</i> (Chenopodiaceae)	Vegetable
Brinjal	<i>Solanum melongena</i> (Solanaceae)	Vegetable
Broccoli	<i>Brassica oleracea</i> var. <i>botrytis</i> (Brassicaceae)	Vegetable
Brussels sprout	<i>Brassica oleracea</i> var. <i>gemmifera</i> (Brassicaceae)	Vegetable
Cabbage	<i>Brassica oleracea</i> var. <i>capitata</i> (Brassicaceae)	Vegetable
Carrot	<i>Daucus carota</i> (Apiaceae)	Vegetable
Cape gooseberry	<i>Physalis peruviana</i> (Solanaceae)	Fruit
Cauliflower	<i>Brassica oleracea</i> var. <i>botrytis</i> (Brassicaceae)	Vegetable
Celery	<i>Apium graveolens</i> var. <i>dulce</i> (Apiaceae)	Vegetable

..../cont.

Commercial horticultural crops (cont.)

Cherimoya	<i>Annona cherimola</i> (Annonaceae)	Fruit
Chora	<i>Vigna unguiculata</i> (Leguminosae – P)	Vegetable
Choyote	<i>Sechium edule</i> (Cucurbitaceae)	Vegetable
Cluster bean	<i>Cyamopsis tetragonoloba</i> (Leguminosae – P)	Vegetable
Cress (Water)	<i>Nasturtium officinale</i> (Brassicaceae)	Vegetable
Cucumber	<i>Cucumis sativus</i> (Cucurbitaceae)	Vegetable
Dhania	<i>Coriandrum sativum</i> (Apiaceae)	Pot herb
Dudhi	<i>Lagenaria siceraria</i> (Cucurbitaceae)	Vegetable
Eggplant	<i>Solanum melongena</i> (Solanaceae)	Vegetable
Endive	<i>Cichorium endivia</i> (Asteraceae)	Vegetable
Fennel	<i>Foeniculum vulgare</i> (Apiaceae)	Pot herb
Fig	<i>Ficus carica</i> (Moraceae)	Fruit
Galka	<i>Luffa cylindrica</i> (Cucurbitaceae)	Vegetable
Garlic	<i>Allium sativum</i> (Alliaceae)	Pot herb

..../cont.

Commercial horticultural crops (cont.)

Gherkin	<i>Cucumis sativus</i> (Cucurbitaceae)	Vegetable
Globe Artichoke	<i>Cynara scolymus</i> (Asteraceae)	Vegetable
Golden granadilla	<i>Passiflora ligularis</i> (Passifloraceae)	Fruit
Grape	<i>Vitis vinifera</i> (Vitaceae)	Fruit
Grapefruit	<i>Citrus paradise</i> (Rutaceae)	Fruit
Guar	<i>Cyamopsis tetragonoloba</i> (Leguminosae -P)	Vegetable
Guava	<i>Psidium guajava</i> (Myrtaceae)	Fruit
Horse radish tree	<i>Moringa oleifera</i> (Moringaceae)	Vegetable
Jackfruit	<i>Artocarpus heterophyllus</i> (Moraceae)	Fruit
Jambolan	<i>Syzygium cumini</i> (Myrtaceae)	Fruit
Jerusalem artichoke	<i>Helianthus tuberosus</i> (Asteraceae)	Vegetable
Kale	<i>Brassica oleracea</i> var. <i>acephala</i> (Brassicaceae)	Vegetable
Karela	<i>Momordica charantia</i> (Cucurbitaceae)	Vegetable
Kohlrabi	<i>Brassica oleracea</i> var. <i>gongyloides</i> (Brassicaceae)	Vegetable

.../cont.

Commercial horticultural crops (cont.)

Leek	<i>Allium ampeloprasum</i> var. <i>porrum</i> (Amaryllidaceae)	Vegetable
Lemon	<i>Citrus limon</i> (Rutaceae)	Vegetable
Lettuce	<i>Lactuca sativa</i> (Asteraceae)	Vegetable
Lime	<i>Citrus aurantifolia</i> (Rutaceae)	Fruit
Loquat	<i>Eriobotrya japonica</i> (Rosaceae)	Fruit
Macadamia	<i>Macadamia ternifolia</i> (Proteaceae)	Edible nut
Mandarin	<i>Citrus reticulata</i> (Rutaceae)	Fruit
Mango	<i>Mangifera indica</i> (Anacardiaceae)	Fruit
Marrow	<i>Cucurbita pepo</i> (Cucurbitaceae)	Vegetable
Methi	<i>Trigonella foenum-graecum</i> (Leguminosae -P)	Pot herb
Melon (Cantaloupe)	<i>Cucumis melo</i> (Cucurbitaceae)	Fruit
Melon (Water)	<i>Citrullus lanatus</i> (Cucurbitaceae)	Fruit
Mint (Round- leaved)	<i>Mentha rotundifolia</i> (Lamiaceae)	Pot herb
Mulberry	<i>Morus</i> spp. (Moraceae)	Fruit

.../cont.

Commercial horticultural crops (cont.)

Mushroom	<i>Psalliota campestris</i> (Basidiomycetes)	Vegetable
Mzambarau	<i>Syzygium cumini</i> (Myrtaceae)	Fruit
Okra	<i>Abelmoschus esculentus</i> (Malvaceae)	Vegetable
Onion	<i>Allium cepa</i> var <i>cepa</i> . (Alliaceae)	Vegetable
Orange	<i>Citrus sinensis</i> (Rutaceae)	Fruit
Papaya or Pawpaw	<i>Carica papaya</i> (Caricaceae)	Fruit
Parsely	<i>Petroselinum crispum</i> (Apiaceae)	Vegetable
Parsnip	<i>Pastinaca sativa</i> (Apiaceae)	Vegetable
Passion fruit	<i>Passiflora edulis</i> (Passifloraceae)	Fruit
Pea	<i>Pisum sativum</i> (Leguminosae – P)	Vegetable
Pea (Pigeon)	<i>Cajanus cajan</i> (Leguminosae – P)	Vegetable
Peach	<i>Prunus persica</i> (Rosaceae)	Fruit
Pear	<i>Pyrus communis</i> (Rosaceae)	Fruit
Pepper (Red)	<i>Capsicum frutescens</i> (Solanaceae)	Spice

.../cont.

Commercial horticultural crops (cont.)

Pepper (Sweet)	<i>Capsicum annuum</i> (Solanaceae)	Spice
Pineapple	<i>Ananas comosus</i> (Bromeliaceae)	Fruit
Plum	<i>Prunus salicina</i> (Rosaceae)	Fruit
Pomegranate	<i>Punica granatum</i> (Punicaceae)	Fruit
Pomelo	<i>Citrus grandis</i> (Rutaceae)	Fruit
Pumpkin	<i>Cucurbita maxima</i> (Cucurbitaceae)	Vegetable
Radish	<i>Raphanus sativus</i> (Brassicaceae)	Vegetable
Radish (Moolee)	<i>Raphanus sativus</i> var. <i>hortensis</i> (Brassicaceae)	Vegetable
Rape	<i>Brassica napus</i> (Brassicaceae)	Vegetable
Rhubarb	<i>Rheum rhaponticum</i> (Polygonaceae)	Dessert vegetable
Savoy	<i>Brassica oleracea</i> var. <i>capitata</i> (Brassicaceae)	Vegetable
Snake Gourd	<i>Trichosanthes cucumerina</i> (Cucurbitaceae)	Vegetable
Spinach	<i>Spinacia oleracea</i> (Chenopodiaceae)	Vegetable

..../cont.

Commercial horticultural crops (cont.)

Spinach (Amaranthus)	<i>Amaranthus</i> spp. (Amaranthaceae)	Vegetable
Spinach (Beet)	<i>Beta vulgaris</i> (Chenopodiaceae)	Vegetable
Strawberry	<i>Fragaria X ananassa</i> (Rosaceae)	Fruit
Sweet corn	<i>Zea mays</i> var. <i>saccharata</i> (Poaceae)	Vegetable
Sweet pepper	<i>Capsicum annuum</i> (Solanaceae)	Vegetable
Saragwo	<i>Moringa oleifera</i> (Moringaceae)	Vegetable
Suran	<i>Amorphophallus campanulatus</i> (Araceae)	Vegetable
Tangerine	<i>Citrus reticulata</i> (Rutaceae)	Fruit
Tindora	<i>Coccinia grandis</i> (Cucurbitaceae)	Vegetable
Tomato	<i>Solanum lycopersicum</i> (Solanaceae)	Fruit, vegetable
Tomato (Cherry)	<i>Solanum lycopersicum</i> var. <i>cerasiformae</i> (Solanaceae)	Fruit, vegetable
Tomato (Tree)	<i>Solanum betaceum</i> (Solanaceae)	Fruit, vegetable
Turia	<i>Luffa acutangula</i> (Cucurbitaceae)	Vegetable
Turnip	<i>Brassica rapa</i> (Brassicaceae)	Vegetable

.../cont.

Commercial horticultural crops (cont.)

Val	<i>Lablab purpureus</i> (Leguminosae – P)	Vegetable
Valor	<i>Lablab purpureus</i> var. <i>benghalensis</i>	Vegetable
Young berry	<i>Rubus strigosus</i> (Rosaceae)	Fruit

CLASS 4: BACKYARD CROPS

Examples of backyard crops

Common name	Botanical name	Utilisation
Akudho (Luo)	<i>Dovyalis macrocalyx</i> (Flacourtiaceae)	Fruit
Angelica	<i>Angelica archangelica</i> (Apiaceae)	Pot herb
Australian brush-cherry	<i>Syzygium paniculatum</i> (Myrtaceae)	Fruit
Balm	<i>Melissa officinalis</i> (Lamiaceae)	Pot herb
Basil	<i>Ocimum basilicum</i> (Lamiaceae)	Pot herb
Bay leaf	<i>Laurus nobilis</i> (Lauraceae)	Spice

.../cont.

Commercial horticultural crops (cont.)

Val	<i>Lablab purpureus</i> (Leguminosae – P)	Vegetable
Valor	<i>Lablab purpureus</i> var. <i>benghalensis</i>	Vegetable
Young berry	<i>Rubus strigosus</i> (Rosaceae)	Fruit

CLASS 4: BACKYARD CROPS

Examples of backyard crops

Common name	Botanical name	Utilisation
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Angelica	<i>Angelica archangelica</i> (Apiaceae)	Pot herb
Australian brush-cherry	<i>Syzygium paniculatum</i> (Myrtaceae)	Fruit
Balm	<i>Melissa officinalis</i> (Lamiaceae)	Pot herb
Basil	<i>Ocimum basilicum</i> (Lamiaceae)	Pot herb
Bay leaf	<i>Laurus nobilis</i> (Lauraceae)	Spice

.../cont.

Backyard crops (cont.)

Bean (Scarlet runner)	<i>Phaseolus coccineus</i> (Leguminosae – P)	Vegetable
Bean (Sword)	<i>Canavalia ensiformis</i> (Leguminosae – P)	Pulse
Borage	<i>Borago officinalis</i> (Boraginaceae)	Pot herb
Breadfruit	<i>Artocarpus altilis</i> (Moraceae)	Fruit
Candlenut	<i>Aleurites moluccana</i> (Euphorbiaceae)	Oilseed
Capulin cherry	<i>Prunus serotina</i> (Rosaceae)	Fruit
Carambola	<i>Averrhoa carambola</i> (Oxalidaceae)	Fruit
Celeriac	<i>Apium graveolens</i> var. <i>rapaceum</i> (Apiaceae)	Pot herb
Chervil	<i>Anthriscus cerefolium</i> (Apiaceae)	Pot herb
Chestnut	<i>Castanea sativa</i> (Fagaceae)	Nut
Cress (Garden)	<i>Lepidium sativum</i> (Brassicaceae)	Vegetable
Curry leaves	<i>Murraya koenigii</i> (Rutaceae)	Pot herb
Dill	<i>Anethum graveolens</i> (Apiaceae)	Pot herb
Elderberry	<i>Sambucus nigra</i> (Caprifoliaceae)	Fruit

..../cont.

Backyard crops (cont.)

Gooseberry	<i>Ribes grossularia</i> (Saxifragaceae)	Fruit
Gooseberry (Chinese)	<i>Actinidia chinensis</i> (Actinidiaceae)	Fruit
Gooseberry (Otaheite)	<i>Phyllanthus acidus</i> (Euphorbiaceae)	Fruit
Guava (Strawberry)	<i>Psidium littorale</i> (Myrtaceae)	Fruit
Horehound	<i>Marrubium vulgare</i> (Lamiaceae)	Pot herb
Horseradish	<i>Armoracia rusticana</i> (Brassicaceae)	Pot herb
Indian Almond	<i>Terminalia catappa</i> (Combretaceae)	Nut
Job's Tears	<i>Coix lachryma-jobi</i> (Poaceae)	Cereal
Keiapple	<i>Dovyalis caffra</i> (Flacourtiaceae)	Fruit
Litchi	<i>Litchi chinensis</i> (Sapindaceae)	Fruit
Marjoram	<i>Marjorana hortensis</i> (Lamiaceae)	Pot herb
Mountain pawpaw	<i>Carica candamarcensis</i> (Caricaceae)	Fruit
Mint (Pennyroyal)	<i>Mentha pulegium</i> (Lamiaceae)	Pot herb
Mint (Spear)	<i>Mentha spicata</i> (Lamiaceae)	Pot herb

.../cont.

Backyard crops (cont.)

Naranjilla	<i>Solanum quitoense</i> (Solanaceae)	Fruit
Natal plum	<i>Carissa grandiflora</i> (Apocynaceae)	Fruit
Nectarine	<i>Prunus persica</i> (Rosaceae)	Fruit
Nim oil	<i>Azadirachta indica</i> (Meliaceae)	Oilseed
Orange (Marmalade)	<i>Citrus aurantium</i> (Rutaceae)	Fruit
Oyster nut	<i>Telfairia pedata</i> (Cucurbitaceae)	Edible nut
Papino	<i>Solanum muricatum</i> (Solanaceae)	Fruit
Pepper	<i>Piper nigrum</i> (Solanaceae)	Spice
Pitanga cherry	<i>Eugenia uniflora</i> (Myrtaceae)	Fruit
Persimmon	<i>Diospyros kaki</i> (Ebenaceae)	Fruit
Purslane	<i>Portulaca oleracea</i> (Portulacaceae)	Vegetable
Quince	<i>Cydonia oblonga</i> (Rosaceae)	Fruit
Rumbutan	<i>Nephelium lappaceum</i> (Sapindaceae)	Fruit
Raspberry (Shanks)	<i>Rubus shankii</i> (Rosaceae)	Fruit

..../cont.

Backyard crops (cont.)

Raspberry (White stemmed)	<i>Rubus albens</i> (Rosaceae)	Fruit
Ra-Strawberry	<i>Rubus illecebrosus</i> (Rosaceae)	Fruit
Rose-apple	<i>Syzygium jambos</i> (Myrtaceae)	Fruit
Rue	<i>Ruta graveolens</i> (Rutaceae)	Pot herb
Sage	<i>Salvia officinalis</i> (Lamiaceae)	Pot herb
Sapodilla	<i>Manilkara achras</i> (Sapotaceae)	Fruit
Sapote (White)	<i>Casimiroa edulis</i> (Rutaceae)	Fruit
Savory	<i>Satureja hortensis</i> (Lamiaceae)	Pot herb
Shallot	<i>Allium cepa</i> var. <i>aggregatum</i> (Alliaceae)	Pot herb
Soursop	<i>Annona muricata</i> (Annonaceae)	Fruit
Spinach	<i>Spinacia oleracea</i> (Chenopodiaceae)	Vegetable
Spinach (Amaranth)	<i>Amaranthus</i> spp. (Amaranthaceae)	Vegetable
Spinach (New Zealand)	<i>Tetragonia expansa</i> (Aizoaceae)	Vegetable
Star apple	<i>Chrysophyllum cainito</i> (Sapotaceae)	Fruit

..../cont.

Backyard crops (cont.)

Sweet lime	<i>Citrus aurantifolia</i> (Rutaceae)	Fruit
Tamarind	<i>Tamarindus indica</i> (Leguminosae – C)	Fruit, beverage
Thyme (Common)	<i>Thymus vulgaris</i> (Lamiaceae)	Pot herb
Thyme (Creeping)	<i>Thymus serpyllum</i> (Lamiaceae)	Pot herb
Tomatillo	<i>Physalis ixocarpa</i> (Solanaceae)	Fruit
Walnut	<i>Juglans regia</i> (Juglandaceae)	Edible nut
Water lemon	<i>Passiflora laurifolia</i> (Passifloraceae)	Fruit
Tuna	<i>Opuntia ficus-indica</i> (Cactaceae)	Fruit
Turmeric	<i>Curcuma longa</i> (Zingiberaceae)	Spice
Valerian	<i>Valeriana officinalis</i> (Valerianaceae)	Drug
Vanilla	<i>Vanilla planifolia</i> (Orchidaceae)	Spice
White sapote	<i>Casimiroa edulis</i> (Rutaceae)	Fruit

CLASS 5: EXPERIMENTAL CROPS

This class is unique in that crops included in it vary from time to time. The crops have been grown or dropped depending on economic and social interest, personal interest, and national policies. It is a class in which we can include or exclude new and old crops depending on the prevailing farming conditions. Unless specifically stated, the experimental dates stated are based on the 1979 classification when the first edition of the book was published.

Crops tested on several occasions

Common name	Botanical name	Utilisation
*Bean (Lima)	<i>Phaseolus lunatus</i> (Leguminosae - P)	Pulse
Bean (Velvet)	<i>Mucuna nivea</i> (Leguminosae - P)	Pulse
*Cinnamon	<i>Cinnamomum zeylanicum</i> (Lauraceae)	Spice
Date palm	<i>Phoenix dactylifera</i> (Arecaceae)	Fruit
Kenaf	<i>Hibiscus cannabinus</i> (Malvaceae)	Fibre
*Lentil	<i>Lens culinaris</i> (Leguminosae - P)	Pulse
*Linseed	<i>Phormium tenax</i> (Phormiaceae)	Oilseed
Pecan nut	<i>Carya pecan</i> (Juglandaceae)	Edible nut

..../cont.

Crops tested on several occasions (cont.)

*Rape oil	<i>Brassica napus</i> (Brassicaceae)	Oilseed
Rauvolfia	<i>Rauvolfia mombasiana</i> (Apocynaceae)	Drug
Roselle	<i>Hibiscus sabdariffa</i> (Malvaceae)	Drug, fibre
Rubber (Para)	<i>Hevea brasiliensis</i> (Euphorbiaceae)	Rubber
Rye	<i>Secale cereale</i> (Poaceae)	Cereal
Safflower	<i>Carthamus tinctorius</i> (Asteraceae)	Oilseed
*Senna	<i>Senna alexandrina</i> (Leguminosae – C)	Drug
Yeheb nut	<i>Cordeauxia edulis</i> (Leguminosae – C)	Edible nut

* crops that have been under trial intermittently for more than 50 years.

Crops under trial for less than 30 years

Common name	Botanical name	Utilisation
Acietuno	<i>Quassia simarouba</i> (Simarobaceae)	Oilseed
Barbados Cherry	<i>Malpighia glabra</i> (Malpighiaceae)	Fruit
Capers	<i>Capparis spinosa</i> (Capparidaceae)	Condiment

..../cont.

Crops under trial - <30 years (cont.)

Chamomile (German)	<i>Matricaria chamomilla</i> (Asteraceae)	Drug
Crambe oil	<i>Crambe abyssinica</i> (Brassicaceae)	Oilseed
Diosgenin yams	<i>Dioscorea</i> spp. (Dioscoreaceae)	Drug
Indigo	<i>Indigofera</i> spp. (Leguminosae – P)	Dye
Mosquito bush	<i>Ocimum basilicum</i> (Lamiaceae)	Essential oil
Nindi	<i>Aeolanthus gamwelliae</i> (Lamiaceae)	Essential oil
Quinine	<i>Cinchona ledgerana</i> (Rubiaceae)	Drug
Sappanwood	<i>Caesalpinia sappan</i> (Leguminosae – C)	Dye
Strophanthin	<i>Strophanthus gratus</i> (Apocynaceae)	Drug
Strophanthin	<i>Strophanthus kombe</i> (Apocynaceae)	Drug
Tara bean	<i>Caesalpinia spinosa</i> (Leguminosae – C)	Tannin
Valerian (Asiatic)	<i>Valeriana wallichii</i> (Velerianaceae)	Drug
Vetiver oil	<i>Vetiveria zizanioides</i> (Poaceae)	Essential oil

Crops recently introduced (about 10 years by 1979)

Common name	Botanical name	Utilisation
Agarobilli	<i>Caesalpinia brevifolia</i> (Leguminosae – C)	Tannin
Bay tree	<i>Pimenta acris</i> (Myrtaceae)	Spice, essential oil
Brazil nut	<i>Bertholletia excelsa</i> (Myrtaceae)	Edible nut
Broom	<i>Cytisus scoparius</i> (Leguminosae – P)	Fibre
Buchu	<i>Agathosma betulina</i> (Rutaceae)	Drug
Cola or Kola	<i>Cola acuminata</i> (Sterculiaceae)	Drug, stimulant
Guyuale	<i>Parthenium argentatum</i> (Asteraceae)	Rubber
Liquorice	<i>Glycyrrhiza glabra</i> (Leguminosae – P)	Flavour
Palmarosa	<i>Cymbopogon martini</i> (Poaceae)	Essential oil
Panama hat plant	<i>Carludovica palmata</i> (Cyclanthaceae)	Fibre
Pistachio	<i>Pistacia vera</i> (Anacardiaceae)	Edible nut
Pyrethrum root	<i>Anacyclus pyrethrum</i> (Asteraceae)	Drug
Tanners dock	<i>Rumex hymenosepalus</i> (Polygonaceae)	Tannin
Tonka bean	<i>Dipteryx odorata</i> (Leguminosae – P)	Oilseed
Wax palm	<i>Copernicia cerifera</i> (Arecaceae)	Wax

Discarded cultivated crops (mainly for economic reasons)

Common name	Botanical name	Utilisation
Arrowroot	<i>Maranta arundinacea</i> (Marantaceae)	Starch
Bean (Adzuki)	<i>Vigna angularis</i> (Leguminosae – P)	Pulse
Bean (Moth)	<i>Vigna aconitifolia</i> (Leguminosae – P)	Pulse
Bean (Rice)	<i>Vigna umbellata</i> (Leguminosae – P)	Pulse
Bean (Snake)	<i>Vigna unguiculata</i> ssp. <i>sesquipedalis</i> (Leguminosae – P)	Vegetable
Bean (Tepary)	<i>Phaseolus acutifolius</i> (Leguminosae– P)	Pulse
Beet (Sugar)	<i>Beta vulgaris</i> subsp. <i>cicla</i> (Chenopodiaceae)	Sugar
Calabash tree	<i>Crescentia cujeta</i> (Bignoniaceae)	Container
Camphor	<i>Cinnamomum camphora</i> (Lauraceae)	Essential oil
Canna	<i>Canna edulis</i> (Cannaceae)	Starch
Carob	<i>Ceratonia siliqua</i> (Leguminosae – C)	Fruit, gum
Carum	<i>Carum copticum</i> (Apiaceae)	Spice
Chamomile (Roman)	<i>Anthemis nobilis</i> (Asteraceae)	Essential oil

..../cont.

Discarded cultivated crops (cont.)

Chickling vetch	<i>Lathyrus sativus</i> (Leguminosae – P)	Pulse
Chinese chilli	<i>Capsicum annuum</i> (Solanaceae)	Spice
Chinese gourd	<i>Benincasa cerifera</i> (Cucurbitaceae)	Vegetable
Citronella	<i>Cymbopogon nardus</i> (Poaceae)	Essential oil
Coffee (Congo)	<i>Coffea excelsa</i> (Rubiaceae)	Beverage
Coffee (Liberian)	<i>Coffea liberica</i> (Rubiaceae)	Beverage
Derris root	<i>Derris elliptica</i> (Leguminosae – P)	Insecticide
Eucalyptus oil	<i>Eucalyptus citriodora</i> (Myrtaceae)	Essential oil
Eucalyptus oil	<i>Eucalyptus globulus</i>	Essential oil
Flax	<i>Phormium tenax</i> (Phormiaceae)	Fibre
Innala	<i>Plectranthus tuberosus</i> (Lamiaceae)	Starchy root
Jute (Tussa)	<i>Corchorus olitorius</i> (Tiliaceae)	Fibre
Jute (White)	<i>Corchorus capsularis</i> (Tiliaceae)	Fibre
Logwood	<i>Haematoxylon campechianum</i> (Leguminosae-C)	Dye

..../cont.

Discarded cultivated crops (cont.)

Mangold	<i>Beta vulgaris</i> (Chenopodiaceae)	Vegetable
Mate	<i>Ilex paraguariensis</i> (Aquifoliaceae)	Beverage
Mauritius hemp	<i>Furcraea gigantea</i> (Amaryllidaceae)	Fibre
Mustard (Black)	<i>Brassica nigra</i> (Brassicaceae)	Spice
Mustard (White)	<i>Sinapis alba</i> (Brassicaceae)	Spice
Niger oil	<i>Guizotia abyssinica</i> (Asteraceae)	Oilseed
Orris root	<i>Iris germanica</i> (Iridaceae)	Essential oil
Paraguay tea	<i>Ilex paraguariensis</i>	Beverage
Perilla oil	<i>Perilla frutescens</i> (Lamiaceae)	Oilseed
Quinoa	<i>Chenopodium quinoa</i> (Chenopodiaceae)	Grain
Ramie	<i>Boehmeria nivea</i> (Urticaceae)	Fibre
Rubber (Castilloa)	<i>Castilla elastica</i> (Moraceae)	Rubber
Rubber (Ceara)	<i>Manihot glaziovii</i> (Euphorbiaceae)	Rubber
Rubber (Funtumia)	<i>Funtumia elastica</i> (Apocynaceae)	Rubber

..../cont.

Discarded cultivated crops (cont.)

Rubber (Indian)	<i>Ficus elastica</i> (Moraceae)	Rubber
Rubber (Para)	<i>Hevea brasiliensis</i> (Euphorbiaceae)	Rubber
Rubber (Zanzibar)	<i>Landolphia kirkii</i> (Apocynaceae)	Rubber
Sunn hemp	<i>Crotalaria juncea</i> (Leguminosae – P)	Fibre
Tung oil	<i>Aleurites montana</i> (Euphorbiaceae)	Oilseed
Wormseed	<i>Chenopodium ambrosoides</i> (Chenopodiaceae)	Drug
Yerba mate	<i>Ilex paraguariensis</i>	Beverage
Ylang-Ylang	<i>Cananga odorata</i> (Annonaceae)	Essential oil

Discarded wild and naturalised plants (mainly for economic reasons).

Common name	Botanical name	Utilisation
Abutilon fibre	<i>Abutilon longicuspe</i> (Malvaceae)	Fibre
—	<i>Bombacopsis glabra</i> (Bombacaceae)	Oilseed
Caper spurge	<i>Euphorbia lathyris</i> (Euphorbiaceae)	Mole-repellant
Croton oil	<i>Croton</i> spp. (Euphorbiaceae)	Drug

..../cont.

Discarded wild and naturalised plants (cont.)

_____	<i>Cymbopogon afronardus</i> (Poaceae)	Essential oil
Datura	<i>Datura stramonium</i> (Solanaceae)	Drug
Desert date	<i>Balanites aegyptiaca</i> (Balanitaceae)	Drug
Doum palm	<i>Hyphaene coriacea</i> (Arecaceae)	Fibre
Ensete	<i>Ensete ventricosum</i> (Musaceae)	Fibre
_____	<i>Excoecaria africana</i> (Euphorbiaceae)	Oleoresin
Frankincense	<i>Boswellia</i> spp. (Burseraceae)	Incense
Gum Arabica	<i>Acacia senegal</i> (Leguminosae – M)	Gum
Gum copal	<i>Hymenaea verrucosa</i> (Leguminosae – C)	Gum
_____	<i>Helichrysum hochstetteri</i> (Asteraceae)	Essential oil
Hibiscus fibre	<i>Hibiscus diversifolius</i> (Malvaceae)	Fibre
Hibiscus fibre	<i>Hibiscus greenwayi</i>	Fibre
Hibiscus fibre	<i>Hibiscus ludwigii</i>	Fibre
Hibiscus fibre	<i>Hibiscus mastersianus</i>	Fibre
Hibiscus fibre	<i>Hibiscus micranthus</i>	Fibre
Hibiscus fibre	<i>Hibiscus panduriformis</i>	Fibre

.../cont.

Discarded wild and naturalised plants (cont.)

Hibiscus fibre	<i>Hibiscus surattensis</i>	Fibre
Jasmine	<i>Jasminum</i> spp. (Oleaceae)	Essential oil
*Jatropha oil	<i>Jatropha curcas</i> (Euphorbiaceae)	Oilseed
Kerda	<i>Capparis elaeagnoides</i> (Capparidaceae)	Condiment
	<i>Lippia carviadora</i> (Verbenaceae)	Essential oil
Mallow fibre	<i>Malva verticillata</i> (Malvaceae)	Fibre
	<i>Melaleuca bracteata</i> (Myrtaceae)	Essential oil
Muhuhu oil	<i>Brachylaena huillensis</i> (Asteraceae)	Essential oil
Myrrh (Sweet)	<i>Commiphora erythraea</i> (Burseraceae)	Oleoresin
—	<i>Ocimum kilimandscharicum</i> (Lamiaceae)	Essential oil
—	<i>Ocimum suave</i> (Lamiaceae)	Essential oil
Pavonia fibre	<i>Pavonia schimperiana</i> (Malvaceae)	Fibre
Pavonia fibre	<i>Pavonia urens</i> (Malvaceae)	Fibre
*Physic nut	<i>Jatropha curcas</i> (Euphorbiaceae)	Oilseed

.../cont.

Discarded wild and naturalised plants (cont.)

Raffia fibre	<i>Raphia pedunculata</i> (Palmae)	Fibre
———	<i>Rauvolfia serpentina</i> (Apocynaceae)	Drug
Rahida	<i>Tecoma undulata</i> (Bignoniaceae)	Fibre
Santonin	<i>Artemisia brevifolia</i> (Asteraceae)	Drug
Santonin	<i>Artemisia kurramensis</i> (Asteraceae)	Drug
Santonin	<i>Artemisia maritima</i> (Asteraceae)	Drug
Sansevieria fibre	<i>Sansevieria cylindrica</i> (Dracaenaceae)	Fibre
Sansevieria fibre	<i>Sansevieria kirkii</i> (Dracaenaceae)	Fibre
Sansevieria fibre	<i>Sansevieria stuckyi</i> (Dracaenaceae)	Fibre
———	<i>Sesamum angolense</i> (Pedaliaceae)	Oilseed
Sida fibre	<i>Sida rhombifolia</i> (Malvaceae)	Fibre
Tephrosia	<i>Tephrosia vogelii</i> (Leguminosae - P)	Insecticide

..../cont.

Discarded wild and naturalised plants (cont.)

Triumfetta fibre	<i>Triumfetta</i> spp. (Tiliaceae)	Fibre
_____	<i>Urena lobata</i> (Malvaceae)	Fibre
_____	<i>Zanthoxylum nitens</i> (Rutaceae)	Essential oil

*The biodiesel producing *Jatropha* project farm was launched at the Kenya Coast in 2011.

_____ is for species without common names

Quinine (*Cinchona ledgerana*) and Madagascar Periwinkle (*Catharanthus roseus*) are two drug plants introduced in the 1970s as cash crops at Kericho in Kenya. The former was already in production as a minor cash crop while the latter was under trials by 1979.

CLASS 6: USEFUL PLANTS FOR HONEY BEES

Melissopalynology or melitology is the process of honey production by bees. This process involves the collection of pollen grains and nectar from the flowering plants which are primarily from the Angiosperms group. Sources of both pollen grains and nectar for the bees in the honey production process are those plants that are collectively called Bee Forage or Useful Plants for Honey Bees. The common environments in East Africa from which bees collect both pollen grains and nectar for honey production are agricultural farms, exotic forest plantations, ornamental plants, indigenous forests, and woodlands. Bees need a variety of nectar and pollen yielding flowering trees, shrubs, lianas, herbs, and crops to make honey. This class will be divided into four sub-classes.

Sub-class A: Agricultural Bee Forage (Crops)

Examples of agricultural bee forage

Common name	Botanical name	Utilisation
African pear	<i>Dacryodes edulis</i> (Burseraceae)	Honey from nectar.
Avocado	<i>Persea americana</i> (Lauraceae)	Honey from pollen and nectar.
Banana	<i>Musa</i> spp. (Musaceae)	Honey from pollen and nectar.
Bean	<i>Phaseolus</i> spp. (Leguminosae P)	Honey from pollen and nectar.

..../cont.

Agricultural bee forage (cont).

Bean (Common)	<i>Phaseolus vulgaris</i> (Leguminosae P)	Honey from pollen and nectar.
Lemon	<i>Citrus limon</i> (Rutaceae)	Honey from nectar.
Clover	<i>Trifolium</i> spp. (Leguminosae P)	Honey from nectar. Common in E.A. highlands.
Coconut	<i>Cocos nucifera</i> (Arecaceae)	Honey from pollen and nectar. Coastal regions of E.A.
Coffee (Arabica)	<i>Coffea arabica</i> (Rubiaceae)	Honey from nectar. Excellent quality. Caution if coffee is sprayed with pesticides.
Coffee (Robusta)	<i>Coffea canephora</i> (Rubiaceae)	Honey from nectar. Excellent quality. Caution is coffee is sprayed with pesticides.
Cotton (Egyptian)	<i>Gossypium barbadense</i> (Malvaceae)	Honey from nectar. Insecticide spray kills bees.
Cotton (Upland)	<i>Gossypium hirsutum</i>	Honey from nectar. Insecticide spray kills bees.
Mango	<i>Mangifera indica</i> (Anacardiaceae)	Honey from pollen, and nectar.

..../cont.

Agricultural bee forage (cont).

Maize (Corn)	<i>Zea mays</i> (Poaceae)	Honey from nectar.
Mustard (Brown or Indian)	<i>Brassica juncea</i> (Brassicaceae)	Honey from nectar.
Oilseed rape	<i>Brassica napus</i> (Brassicaceae)	Honey from nectar
Orange (Sweet)	<i>Citrus sinensis</i> (Rutaceae)	Honey from nectar.
Simsim	<i>Sesamum indicum</i> (Pedaliaceae)	Honey from nectar.
Sisal	<i>Agave sisalana</i> (Agavaceae)	Honey from nectar. But with unpleasant flavour.
Sunflower	<i>Helianthus annuus</i> (Asteraceae)	Honey from pollen, and nectar. Attractive to honey bees.
Vetch	<i>Lathyrus</i> spp. (Leguminosae P)	Honey from nectar. Attractive to honey bees.

Sub-class B: Plantation (Exotic) Trees

Examples of plantation trees

Common name	Botanical name	Utilisation
Calliandra	<i>Calliandra calothyrsus</i> (Leguminosae M)	Honey from pollen and nectar.
Grevillea	<i>Grevillea robusta</i> (Proteaceae)	Honey from nectar.
Gum trees	<i>Eucalyptus</i> spp. (Myrtaceae)	Honey from nectar. Fair quality honey. Many species are excellent sources of nectar.
Leucaena	<i>Leucaena leucocephala</i> (Leguminosae M)	Honey from pollen, and nectar.
Milletia	<i>Milletia</i> spp. (Leguminosae P)	Honey from pollen and nectar.
Oil palm	<i>Elaeis guineensis</i> (Aracaceae)	Honey from pollen. Flowers throughout the year.
Prosopis	<i>Prosopis juliflora</i> (Leguminosae M)	Honey from pollen and nectar. Good bee plant.

Sub-class C: Ornamental trees, shrubs and herbs

Examples of ornamental trees, shrubs and herbs

Common name	Botanical name	Utilisation
Bottle brush tree	<i>Callistemon viminalis</i> (Myrtaceae)	Honey from pollen and nectar.
Cestrum	<i>Cestrum</i> spp. (Solanaceae)	Honey from pollen and nectar. Favoured by bees.
Flamboyant	<i>Delonix regia</i> (Leguminosae C)	Honey from pollen and nectar.
Holy basil	<i>Ocimum tenuiflorum</i> (Lamiaceae). Also <i>O. basilicum</i> , <i>O. gratissimum</i>	Honey from nectar.
Jacaranda	<i>Jacaranda mimosifolia</i> (Bignoniaceae)	Honey from nectar. High quality honey. Favoured by bees.
Kei apple	<i>Dovyalis caffra</i> (Flacourtiaceae)	Honey from nectar. Very attractive to honeybees when in flower.
Salvia	<i>Salvia</i> spp. eg. <i>S. coccinea</i> (Lamiaceae)	Honey from pollen and nectar.
Tecomaria (Cape Honeysuckle)	<i>Tecomaria capensis</i> (Bignoniaceae)	Honey from nectar.

Sub-class D: Indigenous forest trees and shrubs

This sub-class forms the most diversified vegetation types in East Africa and a rich type of bee forage. Listed below are the best examples in the region.

Examples of indigenous forest trees and shrubs

Common name	Botanical name	Utilisation
Acacia (Thorn trees)	<i>Acacia</i> spp. (many) (Leguminosae - M)	Honey from pollen and nectar. Most common in woodlands, scrublands, and savannas. High quality honey.
Albizia	<i>Albizia</i> spp. (Leguminosae - M)	Honey from pollen and nectar.
Cape holly	<i>Ilex mitis</i> (Aquifoliaceae)	Honey from pollen and nectar. High quality.
Combretum	<i>Combretum</i> spp. Many) (Combretaceae)	Honey from pollen and nectar. High quality. Common in woodlands, scrublands, savannas.
Croton	<i>Croton</i> spp. (Euphorbiaceae)	Honey from nectar. High quality. Attractive to honeybees.
Dalbergia	<i>Dalbergia</i> spp. (Leguminosae - P)	Honey from nectar.

.../cont.

Indigenous forest trees and shrubs (cont.)

Dombeya (Mukeyo-Swahili)	<i>Dombeya</i> spp. (Sterculiaceae)	Honey from nectar. High quality.
Hagenia	<i>Hagenia abyssinica</i> (Rosaceae)	Honey from pollen and nectar. Montane highland forests.
Julbernadia (Mukuwa-Swahili)	<i>Julbernadia</i> <i>magnistipulata</i> (Leguminosae – C)	Honey from nectar. Coastal forests, woodlands.
Kapok tree	<i>Ceiba pentandra</i> (Bombacaceae)	Honey from pollen and nectar.
Kotschya	<i>Kotschya africana</i> (Leguminosae – P)	Honey from pollen, nectar. Riverine, swamps.
Kotschya	<i>Kotschya recurvifolia</i>	Honey from nectar. Highland areas.
Mpepeta (Swahili)	<i>Dialium orientale</i> (Leguminosae – C)	Honey from pollen and nectar. Coastal woodland, attractive to bees.
Oil bean tree	<i>Pentaclethra macrophylla</i> (Leguminosae - M)	Honey from pollen and nectar.
Pentas	<i>Pentas</i> spp. (Rubiaceae)	Honey from nectar.
Polyscias	<i>Polyscias fulva</i> (Araliaceae)	Honey from pollen and nectar. Upland forests and riverine.
Red-hot poker tree	<i>Erythrina abyssinica</i> (Leguminosae – P)	Honey from pollen, nectar. Widespread in savanna woodland, grassland.

.../cont.

Indigenous forest trees and shrubs (cont.)

Rose apple type fruit trees	<i>Syzygium</i> spp. (Myrtaceae)	Honey from nectar.
Jambolan	<i>Syzygium cumini</i>	Widely cultivated. Attractive to bees.
Mzuari-Swahili	<i>Syzygium guinense</i>	Riverine, wooded grassland.
Schefflera	<i>Schefflera</i> spp. (Araliaceae)	Honey from nectar. Common in wet upland forests.
Strychnos	<i>Strychnos</i> spp. (Loganiaceae)	Honey from pollen and nectar. Coastal woodland and savanna thickets, riverine forests.
Vernonia	<i>Vernonia</i> spp. (Asteraceae)	Honey from pollen and nectar.

CLASS 7: FORBIDDEN CROPS

Examples of forbidden crops

Common name	Botanical name	Utilisation
Cocaine	<i>Erythroxylum coca</i> (Erythroxylaceae)	Drug
Cocaine	<i>Erythroxylum novogranatense</i>	Drug
Hemp	<i>Cannabis sativa</i> (Cannabaceae)	Drug

.../cont.

Indigenous forest trees and shrubs (cont.)

Rose apple type fruit trees	<i>Syzygium</i> spp. (Myrtaceae)	Honey from nectar.
Jambolan	<i>Syzygium cumini</i>	Widely cultivated. Attractive to bees.
Mzuari-Swahili	<i>Syzygium guinense</i>	Riverine, wooded grassland.
Schefflera	<i>Schefflera</i> spp. (Araliaceae)	Honey from nectar. Common in wet upland forests.
Strychnos	<i>Strychnos</i> spp. (Loganiaceae)	Honey from pollen and nectar. Coastal woodland and savanna thickets, riverine forests.
Vernonia	<i>Vernonia</i> spp. (Asteraceae)	Honey from pollen and nectar.

CLASS 7: FORBIDDEN CROPS

Examples of forbidden crops

Common name	Botanical name	Utilisation
Cocaine	<i>Erythroxylum coca</i> (Erythroxylaceae)	Drug
Cocaine	<i>Erythroxylum novogranatense</i>	Drug
Hemp	<i>Cannabis sativa</i> (Cannabaceae)	Drug

.../cont.

Forbidden crops (cont.)

Marijuana	<i>Cannabis sativa</i> (Cannabaceae)	Drug
Opium poppy	<i>Papaver somniferum</i> (Papavaraceae)	Drug

The two species of *Erythroxylum* listed are natives of tropical South America and are grown as a source of cocaine which is an illegal drug. In East Africa, the two crops were grown at the Amani Research Station, Lushoto District in Tanzania, during the 1920s and 1930s. *Cannabis sativa* is a central Asian plant now widely cultivated and naturalised throughout the world. Despite being declared illegal, the plant is widely cultivated as a drug plant, but it also occurs as a weed of other cultivated crops. It is known by many names such as bhang, dagga, marijuana, pot, or Indian hemp (See Figure 53).

Illustrations of Selected Crops and Economic Plants of East Africa

- Fig. 1a-c Corn or maize (*Zea mays*)
Fig. 2a-b New rice for Africa (*Oryza sativa*)
Fig. 3a-b Sorghum (*Sorghum bicolor*)
Fig. 4a-b Cowpea *Vigna unguiculata*
Fig. 5a-m Common bean with garden varieties
 (*Phaseolus vulgaris*)
Fig. 6a-b Scarlet runner (*Phaseolus coccineus*)
Fig. 7a-e Green grams (*Vigna radiata*)
Fig. 8 Cassava (*Manihot esculenta*)
Fig. 9 Cocoyam (*Colocasia esculenta*)
Fig. 10a-f Sugar cane varieties (*Saccharum officinarum*)
Fig. 11a-b Tea (*Camellia sinensis*)
Fig. 12 Cotton (*Gossypium hirsutum*)
Fig. 13a-b Sisal (*Agave sisalana*)
Fig. 14a-b Cashew nut (*Anacardium occidentale*)
Fig. 15 Castor plant fruits (*Ricinus communis*)
Fig. 16a-b Coconut (*Cocos nucifera*)
Fig. 17 Annatto (*Bixa orellana*)
Fig. 18a-b Pyrethrum (*Chrysanthemum cinerariifolium*)
Fig. 19a-f Chick pea (*Cicer arietinum*)
Fig. 20 Drum head cabbage (*Brassica oleracea* var. *capitata*)
Fig. 21 Spinach (*Spinacia oleracea*)
Fig. 22 Coriander (*Coriandrum sativum*)
Fig. 23 Broccoli (*Brassica oleracea* var. *italica*)
Fig. 24 Brussels sprout (*Brassica oleracea* var. *gemmifera*)
Fig. 25 Carrot (*Daucus carota*)
Fig. 26 Celery (*Apium graveolens*)
Fig. 27 Chillies (*Capsicum frutescens*)
Fig. 28 Courgette (*Cucurbita pepo*)
Fig. 29 Garlic (*Allium sativa*)

- Fig. 30 Ginger (*Zingiber officinale*)
Fig. 31 Leeks (*Allium ampeloprasum*)
Fig. 32 Parsely (*Petroselinum crispum*)
Fig. 33 Okra (*Hibiscus esculentus*)
Fig. 34 Sweet pepper (*Capsicum annuum*)
Fig. 35a-b Tomato (*Solanum lycopersicum*)
Fig. 36 Kale (*Brassica oleracea* var. *acephala*)
Fig. 37 Jatropha (*Jatropha curcas*)
Fig. 38 Dudhi *Lagenaria siceraria*
Fig. 39 Arabica Coffee (*Coffea arabica*)
Fig. 40a-b Papaya (*Carica papaya*)
Fig. 41 Tamarillo (*Cyphomandra betaceae*)
Fig. 42 Passion fruit (*Passiflora edulis*)
Fig. 43a-f Banana (*Musa* spp.)
Fig. 44a-f Mango (*Mangifera indica*)
Fig. 45a-e Avocado (*Persea americana*)
Fig. 46 Strawberry (*Fragaria* X *ananassa*)
Fig. 47a-e Pineapple (*Ananas comusus*)
Fig. 48 Lemon (*Citrus limon*)
Fig. 49 Soursop (*Annona muricata*)
Fig. 50a-b Tobacco (*Nicotiana tabacum*)
Fig. 51 Sunflower (*Helianthus annuus*)
Fig. 52 Tephrosia (*Tephrosia vogelii*)
Fig. 53 Hemp (*Cannabis sativa*)
Fig. 54a-c Australian flame tree (*Brachychiton acerifolium*)
Fig. 55a-b Red flowering gum (*Eucalyptus ficifolia*)
Fig. 56 Jacaranda (*Jacaranda mimosifolia*)
Fig. 57 Lemon gum (*Eucalyptus citriodora*)
Fig. 58 Flame tree (*Spathodea campanulata*)



Fig. 1a Corn or Maize (*Zea mays*) field



Fig. 1b Corn or Maize (*Zea mays*)



Fig. 1c Corn or Maize (*Zea mays*)



Fig. 2a New Rice for Africa - NERICA (*Oryza sativa*)



Fig. 2b Farmers harvesting and packing NERICA (*Oryza sativa*)



Fig. 3a Sorghum - KARI Mtama-1 (*Sorghum bicolor*)



Fig. 3b Sorghum - Gadama
(*Sorghum bicolor*)



Fig. 4a Cowpea K80
(*Vigna unguiculata*)
straw coloured pods



Fig. 4b Cowpea M66
(*Vigna unguiculata*)
purple pods



Fig. 5a Common bean varieties
(*Phaseolus vulgaris*)



Fig. 5b Common bean
(*Phaseolus vulgaris*)

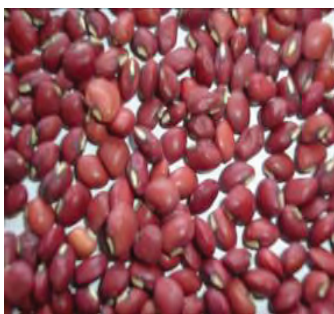


Fig. 5c Common bean
(*Phaseolus vulgaris*)



Fig. 5d Common bean
(*Phaseolus vulgaris*)



Fig. 5e Bean (*Phaseolus vulgaris*)



Fig. 5f Bean (*Phaseolus vulgaris*)

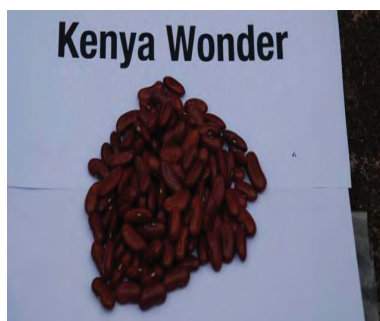


Fig. 5g Bean (*Phaseolus vulgaris*)



Fig. 5h Bean (*Phaseolus vulgaris*)



Fig. 5i Bean (*Phaseolus vulgaris*)



Fig. 5j Bean (*Phaseolus vulgaris*)



Fig. 5k Mexican black bean (*Phaseolus vulgaris*)



Fig. 5l Kidney bean (*Phaseolus vulgaris*)



Fig. 5m Red Haricot (*Phaseolus vulgaris*)



Fig. 6a Scarlet runner (*Phaseolus coccineus*)



Fig. 6b Scarlet runner (*Phaseolus coccineus*)



Fig. 7a Green Grams
(*Vigna radiata*) green pods



Fig. 7b Green Grams (*Vigna radiata*)



Fig. 7c Green Grams (*Vigna radiata*)
poles-strings-wires
propagation method



Fig. 7d Green Grams
(*Vigna radiata*)



Fig. 7e Green Grams (*Vigna radiata*)
sticking propagation
method



Fig. 8 Cassava (*Manihot esculenta*)
plant and roots



Fig. 9 Cocoyam plant (*Colocasia esculenta*)



Fig. 10a Sugar cane (*Saccharum officinarum*)



Fig. 10b Sugar cane (*Saccharum officinarum*)



Fig10c Sugar cane (*Saccharum officinarum*)



Fig. 10d Sugar cane (*Saccharum officinarum*)

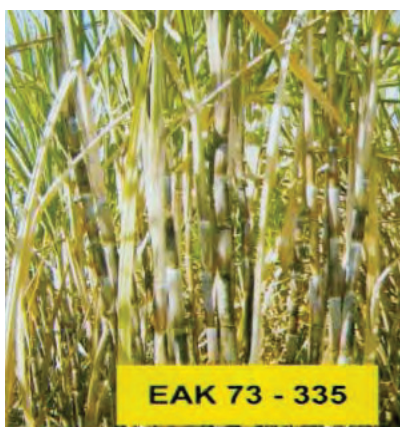


Fig. 10e Sugar cane (*Saccharum officinarum*)



Fig10f Sugar cane (*Saccharum officinarum*)



Fig. 11a Mature tea plantation (*Camellia sinensis*)



Fig. 11b Freshly pruned tea (*Camellia sinensis*)



Fig. 12 Cotton plant
(*Gossypium hirsutum*)



Fig. 13a Single-row spacing of sisal
(*Agave sisalana*)



Fig. 13b Sisal (*Agavae sisalana*)
Pole bearing bulbils



Fig. 14a Cashew nut tree
(*Anacardium occidentale*)



Fig. 14b Cashew nut (apple and nut)
(*Anacardium occidentale*)



Fig. 15 Castor plants fruiting (*Ricinus communis*)



Fig. 16a Coconut (*Cocos nucifera*)
Palm and copra



Fig. 16b A bunch of young coconut
fruits (*Cocos nucifera*)



Fig. 17 Mti wa rangi (Mrangi) – Annatto (*Bixa orellana*)



Fig. 18a Pyrethrum plantation (*Chrysanthemum cinerarifolium*)



Fig. 18b Farmers picking mature pyrethrum
(*Chrysanthemum cinerarifolium*)



Fig. 19a Chick pea (*Cicer arietinum*)
Mature



Fig. 19b Chick pea
(*Cicer arietinum*)



Fig. 19c Chick pea (*Cicer arietinum*)
mature pods



Fig. 19d Chick pea (*Cicer arietinum*)
Kabuli-type, white flowers



Fig. 19e Chick pea (*Cicer arietinum*)
(Desi-type, pink flowers)

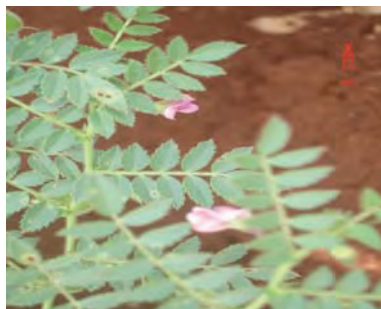


Fig. 19f Chick pea (*Cicer arietinum*)
(Desi-type, pink flowers)



Fig. 20 Drum head cabbage
(*Brassica oleracea* var.
capitata)



Fig. 21 Spinach (*Spinacia oleracea*)

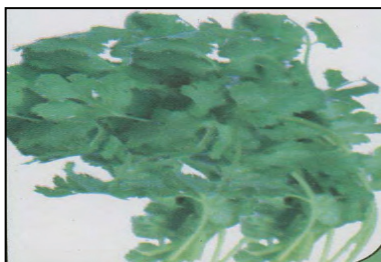


Fig. 22 Coriander
(*Coriandrum sativum*)



Fig. 23 Broccoli
(*Brassica oleracea* var.
italica)



Fig. 24 Brussels sprout
(*Brassica oleracea* var.
gemmifera)



Fig. 25 Carrot (*Daucus carota*)



Fig. 26 Celery (*Apium graveolens*)



Fig. 27 Chillies (*Capsicum frutescens*)



Fig. 28 Courgette (*Cucurbita pepo*)



Fig. 29 Garlic (*Allium sativa*)



Fig. 30 Ginger
(*Zingiber officinale*)



Fig. 31 Leeks
(*Allium ampeloprasum*)



Fig. 32 Parsely
(*Petroselinum crispum*)



Fig. 33 Okra
(*Hibiscus esculentus*)



Fig. 34 Sweet pepper
(*Capsicum annuum*)

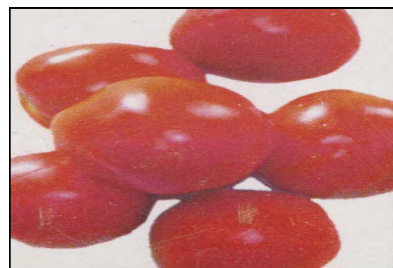


Fig. 35a Tomato
(*Solanum lycopersicum*)



Fig. 35b Tomato
(*Solanum lycopersicum*)



Fig. 36 Kale
(*Brassica oleracea* var. *acephala*)



Fig. 37 Jatropha (*Jatropha curcas*)



Fig 38 Dudhi (*Lagenaria siceraria*)



Fig. 39 Arabica Coffee
(*Coffea arabica*)



Fig. 40a Papaya (*Carica papaya*)



Fig. 40b Papaya (*Carica papaya*)



Fig. 41 Tamarillo
(*Cyphomandra betaceae*)



Fig. 42 Passion fruit
(*Passiflora edulis*)



Fig. 43a Banana (*Musa* spp.)



Fig. 43b Banana (*Musa* spp.)



Fig. 43c Banana (*Musa* spp.)



Fig. 43d Banana (*Musa* spp.)



Fig. 43e Matoke (*Musa* spp.)



Fig. 44a Mango flowers
(*Mangifera indica*)

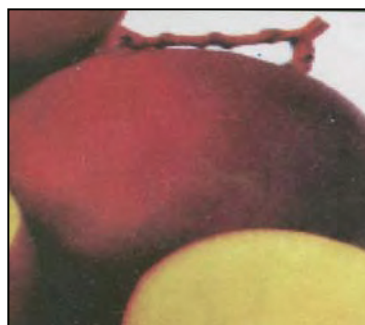


Fig. 44b Haden mango fruit
(*Mangifera indica*)

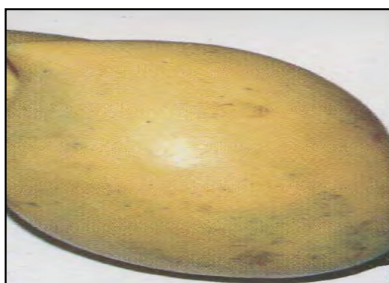


Fig. 44c Ngowe mango fruit
(*Mangifera indica*)



Fig. 44d Apple mango fruit
(*Mangifera indica*)



Fig. 44e Kent mango fruit
(*Mangifera indica*)



Fig. 44f Van dyke mango fruit
(*Mangifera indica*)

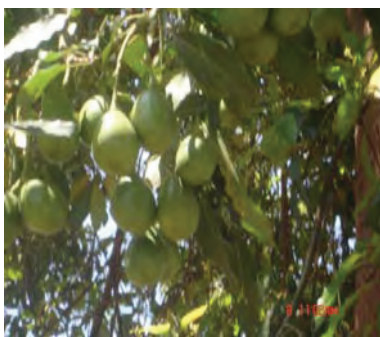


Fig. 45a Avocado
(*Persea americana*)



Fig. 45b Avocado
(*Persea americana*)



Fig. 45c Avacado hass fruit
(*Persea americana*)

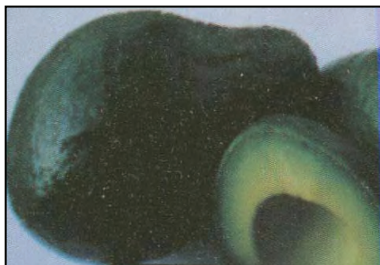


Fig. 45d Avacado fuerte fruit
(*Persea americana*)

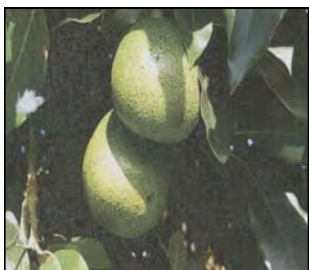


Fig. 45e Avocado
(*Persea americana*)

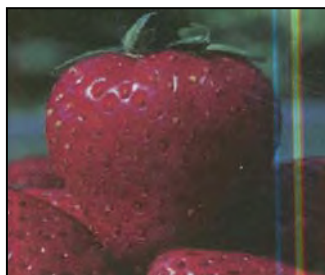


Fig. 46 Strawberry fruit
(*Fragaria X ananassa*)



Fig. 47a Common pineapple
(*Ananas comosus*)



Fig47b Baby pineapple
(*Ananas comosus*)



Fig. 47c Pineapple (*Ananas comosus*)



Fig. 47d Pineapple
(*Ananas comosus*)



Fig. 47e Pineapple
(*Ananas comosus*)



Fig. 48 Lemon
(*Citrus limon*)



Fig.49 Soursop
(*Annona muricata*)



Fig. 50a Tobacco
(*Nicotiana tabacum*)



Fig. 50b Tobacco
(*Nicotiana tabacum*)

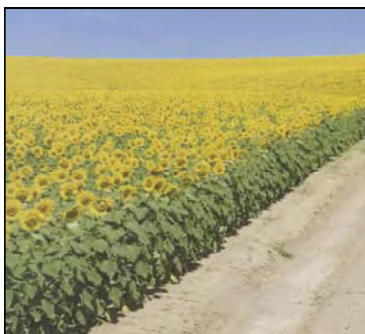


Fig. 51 Sunflower
(*Helianthus annuus*)



Fig. 52 Tephrosia
(*Tephrosia vogelii*)



Fig. 53 Hemp
(*Cannabis sativa*)

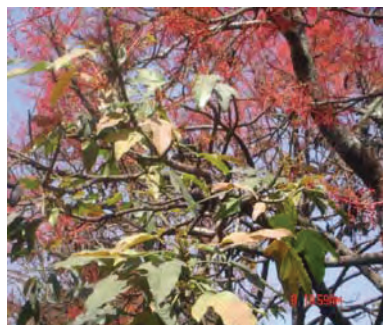


Fig. 54a Australian flame tree
(Leaves and flowers)
(*Brachychiton acerifolium*)



Fig. 54b Australian flame tree flowers
(*Brachychiton acerifolium*)

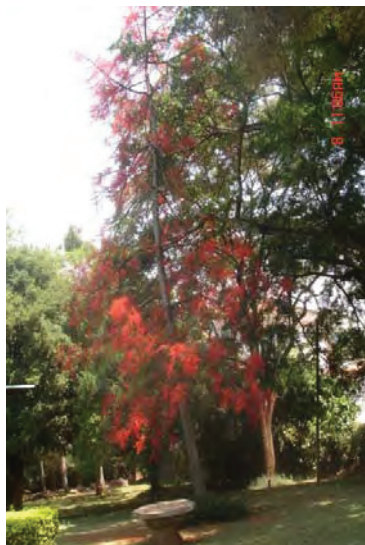


Fig. 54c Australian flame tree
(*Brachychiton acerifolium*)



Fig. 55a Red flowering gum
(*Eucalyptus ficifolia*)



Fig. 55b Red flowering gum
(*Eucalyptus ficifolia*)

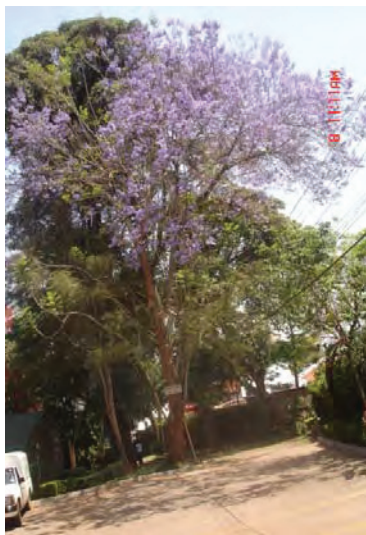


Fig. 56a Jacaranda
(*Jacaranda mimosifolia*)



Fig. 57 Lemon gum
(*Eucalyptus citriodora*)



Fig 58 Flame tree (*Spathodea campanulata*)

SELECTED BIBLIOGRAPHY

Acland, J.D., 1973, *East African crops*, Longman London and FAO Rome.

Beentje, H., 1994, *Kenya trees, shrubs and lianas*, National Museums of Kenya, Nairobi.

Horticultural Society of Kenya, 1995, *Gardening in East Africa*, The Horticultural Society of Kenya, Nairobi.

Katende, A.B. et al., 1995, *Useful trees and shrubs for Uganda*, Regional Soil Conservation Unit No. 10, SIDA, Nairobi.

Katende, A.B. et al., 1999, *Wild food plants and mushrooms of Uganda*, Regional Land Management Unit (RELMA), SIDA, Nairobi.

Kew Herbarium Staff, 1952-2012, *Flora of tropical East Africa*, Royal Botanic Gardens, Kew, United Kingdom.

Kokwaro, J.O., 1979, *Classification of East African crops*, Kenya Literature Bureau Nairobi.

Kokwaro, J.O., 1994, *Flowering plant families of East Africa*, East African Educational Publishers, Nairobi.

Lemmens R. & Oyen L., 2004-12, *Plant resources of tropical Africa* (PROTA) volumes 1 - 16, Wageningen, Netherlands.

Masefield, G.B. et al., 1973, *The Oxford book of food plants*, Oxford University Press London.

Maundu, P.M. et al., 1999, *Traditional food plants of Kenya*, National Museums of Kenya, Nairobi.

- Maundu P. & Tegnas B., 2005, *Useful trees and shrubs for Kenya*, World Agroforestry Centre, Nairobi.
- Mbuya, P.L. et. al., 1994, *Useful trees and shrubs for Tanzania*, Regional Soil Conservation Unit No. 6, SIDA, Nairobi.
- Nyambo, A. et. al., 2005, *Fruits and nuts for Tanzania*, World Agroforestry Centre, Nairobi.
- Paterson, P.D., 2006, *Beekeeping, The tropical agriculturalist*, Macmillan Publishers Ltd., London.
- Purseglove, J.W., 19689, *Tropical crops dicotyledons* Vols. 1 and 2, Longman, London.
- Purseglove, J.W., 1972, 1984, *Tropical crops monocotyledons* Vols. 1 and 2, Longman, London.
- Ruffo, C. K. et al., 2002, *Edible wild plants of Tanzania*, Regional Land Management Unit (RELMA), SIDA, Nairobi.

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Classification of East African Crops (2nd Edition, 2013) is a revised modern version of a book first published in 1979. It is a handbook grouping the crops, timber, and common ornamental plants found in East Africa into 26 classes. The plants are discussed under two broad categories, namely, usage and commercial classifications. The Type A group of plants, based on usage classification, has 19 classes including the famous categories such as cereals, fruits, vegetables, legumes, oil crops, fibre crops, and forage and fodder plants among others.

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Each class has a full or brief discussion of the crops or useful plants grown in modern East Africa covering Kenya, Tanzania, Uganda, Rwanda, and Burundi. The most important part of the handbook is the list of all major and minor crops and useful plants in each class containing the English or trade names, the botanical names, and the families to which they belong. The book has over 70 selected colour plates illustrating different crops and other useful plants. It is an excellent handbook for university and college scholars, students, and researchers in agriculture, forestry, environment, and animal husbandry.

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ISBN 9789966792242



University of Nairobi Press

ISBN 978-9966-792-24-2



9 789966 792242